The Newspaper of Information Systems Management
August 12, 1996, Vol. 30, No. 33, 132 Pages, $3/Copy, $48/Year

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Year 2000 woes may blindside desktop apps

By April Jacobs

The year 2000 crisis isn't just for mainframes. But despite plenty of forewarning, users seem to be turning a blind eye to the potential problems lurking in scores of desktop applications.

For example, a QuickPoll of 136 respondents who last week visited the @Computerworld World Wide Web site found that only 38% have bothered to inventory desktop applications with respect to year 2000 testing compliance.

Philadelphia's CIO John Carrow *has year 2000 upgrade under way*

Yet analysts and vendors familiar with the infamous two-digit problem that will emerge in 2000 said homegrown and some shrink-wrapped desktop and client/server applications can be a source of problems if not checked before Jan. 1, 2000.

And even those users who planned ahead aren't out of the woods yet. Virgil Pittman, chief informa-

Year 2000, *page 15*

DAVID MARSHALL

AOL unplugged

Users back electronic commerce despite daylong outage

By Mitch Wagner

Information systems managers watched last week's one-day outage at America Online with dismay, worried that it would prompt undeserved aspersions about the viability of the Internet and online services as vehicles for electronic commerce.

"This kind of thing doesn't help," said Richard Warren, vice president of information services at Judd's, Inc., a printing services company in Strasburg, Va.

> **"I would like to be able to tell you that this sort of thing will never happen again, but frankly, I can't make that commitment . . ."**
>
> — Steve Case, chairman and CEO of America Online

"Everything that undermines quality of service is going to damage faith in the entire proposition of electronic commerce. That's why service providers have to start providing guaranteed service and guaranteed bandwidth."

In what pundits called the largest-ever service failure in cyberspace, AOL's 6 million customers lost connectivity for most of last Wednesday when the entire network was down. Officials at America Online, Inc. said it will cost $3 million to

AOL, *page 16*

Unix camp seeks high-end refuge

By Craig Stedman

Enterprise systems

Unix servers are about to get squeezed between the rock of Windows NT and the hard place of the mainframe installed base.

The combination of Microsoft Corp.'s Windows NT and commodity servers based on Intel Corp.'s Pentium Pro chip is starting to pose a significant threat to low-end and midrange Unix boxes.

That threat will become more palpable later this year and next as PC server vendors take advantage of the improved scaling promised by Windows NT 4.0, which was released for manufacturing two weeks ago. Unix vendors are focusing higher up on the enterprise computing food chain, in search of a safe haven.

Stealing business from mainframes is an important piece of the strategy for companies such as Hewlett-Packard Co. and Sun Microsystems, Inc. But potential high-end Unix converts might want to heed some words of caution from several users who are in the process of moving applications from big iron to Unix.

Those users said they know mainframes, and Unix machines just don't stack up when it comes to issues such as reliability, I/O, transaction volumes, management tools and utilities.

Unix, *page 107*

Online SNOOP!

A *Computerworld* editor asks investigators to dig up personal dirt on him – and lives to regret it.

See In Depth, page 82.

Extranet: Best of both 'nets

By Kim S. Nash

The biggest mortgage company in the U.S. is doing things halfway: half Internet, half intranet.

Countrywide Home Loans, Inc. has built a hybrid application, called extranet, that lets its bank and mortgage broker partners access selected, cordoned-off parts of its internal intranet and financial databases from the Internet.

It is smart to seize the hybrid idea, said Susan Kulakowski, a residential mortgage analyst at Duff & Phelps, Inc., a brokerage in New York.

"The easier it is to complete a [mortgage loan] application and get it through the approval process, through all the financial rigmarole, the better," she said. "It means you

Extranet, *page 107*

ALAN LEVERSON

Countrywide's Jerry Gross *had to convince doubters inside and outside the firm that Internet security would work*

Newspaper

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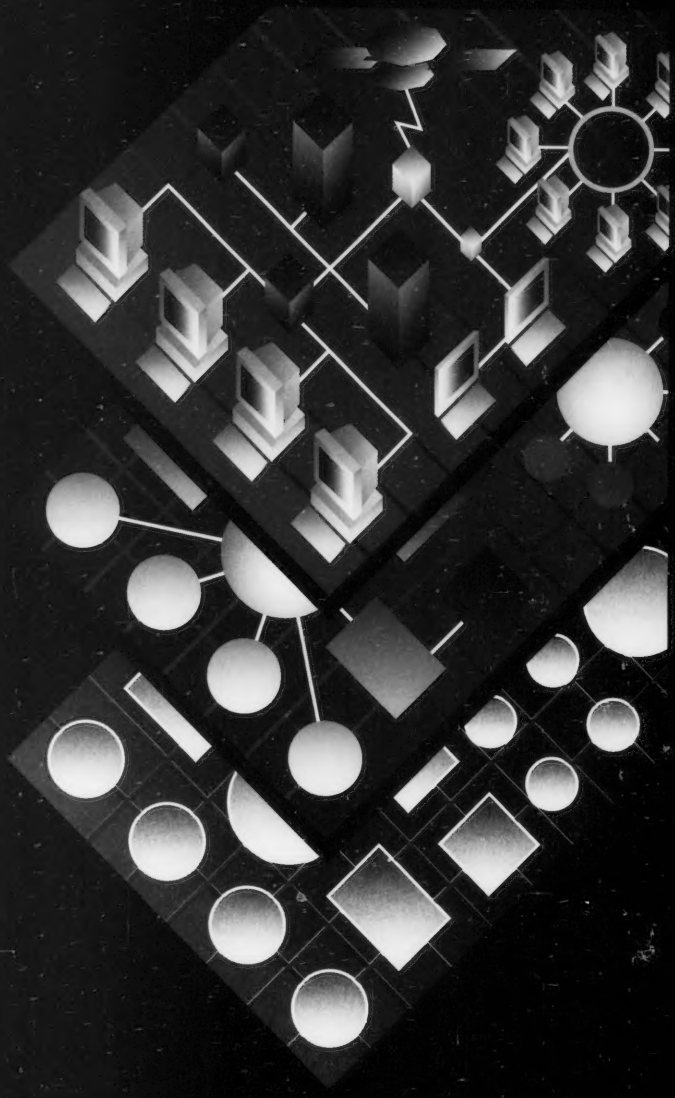
How Do You Turn Your Client/Server Mess...



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— which became a **runaway success** almost overnight. In the last 5 months we have sold the CS/8,000 to hundreds of corporate, military and government clients, including many of the **Fortune 1000**, the **U.S. Air Force**, the **Department of Education**, and the **Federal Reserve Bank**.

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dedicated to providing larger scale solutions which can range from a single site all the way up to enterprise-wide systems

— destined to become the **ultimate** client/server design, planning and management tool for multinational corporations, government and military users at all levels.

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ng Solutions, Of Course!

In fact, the **CS/10,000** solves so many of the computing challenges faced every day by people like yourself, from network administrators to project managers to CIOs, that we were back-ordered the first week we announced the product!

Organizations like **Samsung**, the **University of Maryland**, **Deutsche Bank**, and **Blue Cross/Blue Shield** are already putting CS/10,000 to work for them to achieve rapid delivery of successful client/server and networking solutions.

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Instead, in the spirit of true *kaizen*, we decided to export the robust new technology we had developed for the **CS/10,000** back into the **CS/8,000**.

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(By the way, watch out for our upcoming **next-generation** product, the **CS/12,000**, which we will be launching at Comdex this year. We can't say too much yet, but it will introduce the first AI-driven virtual network architectures, among other things. We promise it will be unlike anything the computing world has ever seen...)

So if you would like to witness computer science history in the making, please come join us at

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Up Front

Half empty?

During my mercifully brief stint as a Girl Scout (before the troop leader drummed me out for having a bad attitude), I committed one piece of advice to memory: "Always be prepared." I never could decide whether the flip side of that little coin of advice should be "Expect the worst" or "Have a good backup plan," but that probably depends on whether you're a pessimist or an optimist.

The optimists of the world will read Steve Ulfelder's story about online snooping (see page 82) and figure no one will ever bother to investigate them electronically. Hey, maybe they're boring enough for that to be true.

But for the rest of us fascinating pessimists, Steve's article will provide a mix of enlightened alarm and odd comfort. He cast himself out like bait in the Internet waters, and frankly, I expected the worst. But no one accessed his bank account, ran up his charge cards or even came back with his grades from college. (Drat! We were wondering...) But his online snoopers did find an amazing amount of raw data about him with only a few keystrokes. In today's wired world, who gets to set the boundaries of privacy invasion?

Certainly one guardian of privacy is a cozy, secure firewall, and our Buyer's Guide ("Hack, whack, attack," beginning on page 77) rates a handful of Windows NT firewall products. It turns out that the greatest challenges for network managers are the preparation and planning needed to install firewalls.

Another group of serious planners and pessimists has to be Cobol programmers, who only a year ago were scrambling to find work. Not anymore. The rise in demand for their services in year 2000 conversion projects is so phenomenal (see story, page 14) that consulting firms stocked with Cobol jockeys are turning away work like understaffed caterers during party season.

Gartner Group analysts tell us that consulting and contractor costs for year 2000 work will rise 20% to 50% next year as demand swells.

Things were never that good in the Girl Scouts, of course. Probably something to do with those awful uniforms.

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com

The 5th Wave by Rich Tennant

"They're fruit flys, Reg. For gosh sake, how many Applets have you written today?!"

Bay bumps up NT support

By Bob Wallace

Bay Networks, Inc. in Santa Clara, Calif., this week will add native Windows NT support for its existing remote access servers.

The result is that users will be able to manage multiple Bay boxes from a Windows NT server.

But users first must buy a Remote Annex remote access server, which can support four to 72 ports. Pricing for the server starts at $1,995. The new Bay Remote Annex software runs on that server. The software is shipping now and costs $495.

Users can leverage the administration and management features already built in to Windows NT and can run Bay's configuration and setup tools on the same servers.

The configuration and setup tools provide a point-and-click interface to NT security and administration features.

That is a big benefit in the eyes of Barry Schwab.

Schwab's company, TeleScan Technologies LLC in West Bloomfield, Mich., maintains a database of trucks and trailers available nationwide. Dealers, using 28.8K bit/sec. modems, upload pictures of their trucks and trailers for hire and download images of those they are interested in renting.

As an NT shop, TeleScan finds it much easier to manage the firm's multiple Remote Annex remote access servers from an NT domain server than to buy multiple dedicated Unix workstations.

"We're [hoping to have] 40,000 people dialing in over 6,000 phone lines," Schwab said. "And that would require managing 200 [Remote Annex servers]. So remote access server management is a huge issue for us."

News Shorts

Web software aplenty

Netscape Communications Corp. this week plans to make available at its World Wide Web site (www.netscape.com) a beta version of its low-end FastTrack Web server for Windows 95. ... **Microsoft Corp.** plans to ship tomorrow Internet Explorer 3.0, an upgrade to its Web browser that supports **Sun Microsystems, Inc.**'s Java programming language and advanced Hypertext Markup Language features. ... And **Microsoft** last week released the beta version of its Internet Merchant System, which includes credit-card processing technology licensed from **Verifone, Inc.** that uses the company's Virtual Point of Sale technology. ... Meanwhile, **Process Software Corp.** in Framingham, Mass., next week will ship a **Novell, Inc.** NetWare version of its Purveyor Web server that, at $795, is half the price of Novell's own Web server.

NASD to secure trades

Under a settlement agreement with the **Securities and Exchange Commission**, the **National Association of Securities Dealers** (NASD) will spend $100 million in the next five years to improve its surveillance of the computer-based Nasdaq Stock Exchange.

SunSoft ships Java tool

SunSoft, Inc. in Mountain View, Calif., this month will ship Java WorkShop, a software development environment for Sun Microsystems Inc.'s Java Internet language. The product costs $295 and will support Windows 95 and NT and Solaris. A version that will run on all Java-enabled platforms is slated to be available by year's end.

3Com pushes Ethernet

In an effort to drive deployment of Fast Ethernet to users with older computers, **3Com Corp.** last week announced its first Fast Ethernet adapter for Industry Standard Architecture (ISA) bus PCs. The Fast EtherLink ISA 10/100 adapter lets PCs support regular Ethernet speeds of 10M bit/sec. or 100M bit/sec. and has 64K bytes of buffer memory. The adapter card is available now and costs $195.

Intel delays new chip

Intel Corp. has delayed shipment of its P55C chip, dubbed MMX, which processes multimedia instructions two to four times faster than standard Pentiums. The chips, which were expected to be available in limited quantities in the fourth quarter, will be delayed until the first quarter next year to allow software developers to write snazzy graphics applications that exploit the chip.

DG, Unisys in tech swap

Data General Corp. and **Unisys Corp.** officials last week said they have agreed to a technology swap that will help each vendor bring greater scalability to its Unix multiprocessing servers that use Intel chips. DG will make its NumaLiine shared memory technology available for Unisys to use in its symmetrical multiprocessing servers. Unisys will let DG include its Scalable Coherent Memory bus technology in DG's Aviion servers.

SAP buys in to Intellicorp

SAP AG last week bought a 14% stake in **Intellicorp, Inc.**, a Mountain View, Calif., vendor of business modeling tools designed to speed implementations of SAP's R/3 enterprise software. Earlier this year, Intellicorp and SAP signed joint development and licensing/distribution agreements that grant Intellicorp the right to include SAP's R/3 Reference Model with its LiveModel tool set.

SHORT TAKES **AT&T Corp.** last week announced it has reached an intercarrier agreement with **Bell Atlantic Nynex Mobile** that will let users send and receive data wirelessly via Cellular Digital Packet Data, regardless of their location in either provider's service area. ... **Hewlett-Packard Co.** last week formed an Enterprise NetServer Operation to push HP's Windows NT-based NetServers as enterprisewide servers. ... **Netscape** last week complained to the U.S. Department of Justice that **Microsoft** lawyers acted anticompetitively by demanding that Netscape drop its negative marketing campaign. ... **Novell** last week shipped Version 2.1 of its ManageWise LAN manager with new support for Windows 95 and OS/2 Warp clients, Windows NT servers, software inventory and virus protection. ... Electronic mail and groupware vendor **On Technology Corp.** is taking a restructuring charge for the third quarter and will lay off about 100 workers, mostly from its E-mail division.

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Inside Computerworld

Aug. 12, 1996

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Breaking news

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Does the AOL network outage change the way you view cyberspace? Weigh in online in our QuickPoll.
www.computerworld.com

Forum: Spam Spade, cyber eye
This week's spotlight forum is with a real-live 'net detective. Find out what he does and how.
www.computerworld.com/forums/

August's @cw Digest
A compendium of weird facts and unusual stats

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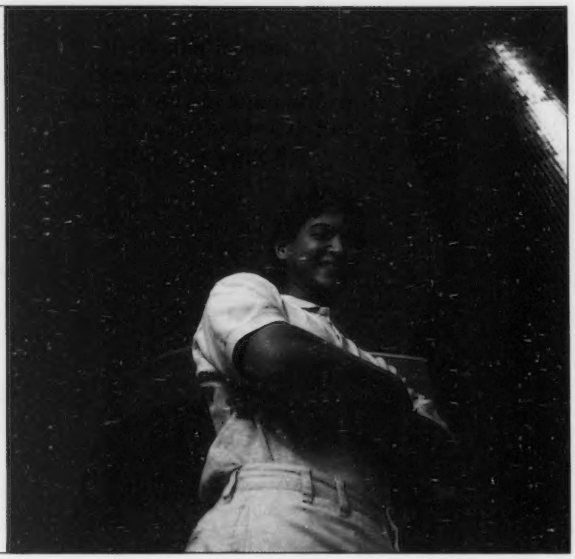
Choice Cuts

Hack, whack, attack
Fledgling NT firewalls are reviewed for Computerworld *by PC Lab.* See **Buyer's Guide, page 77**



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Scale questions dog Exchange

By Tim Ouellette

Halfway through its rookie season, Microsoft Corp.'s Exchange Server still languishes under the "has potential" label.

Since its release in April, some users and analysts have given the messaging/groupware system mixed reviews. And some users are waiting for the next refresh of the product.

There are concerns about enterprisewide scalability and reliability, the arduous effort required to install an Exchange network and the increasingly appealing option of turning to Internet standards-based mail (see related story, page 8). At the same time, many Exchange installations, including users at Nabisco, Inc. and the Kentucky Department of Education, are pleased with their messaging capabilities.

Holding back

Microsoft officials said they are happy with the pace of Exchange sales and that the ability to scale to very large groups of users is seen as a strength of the product.

But Eric Brown, an analyst at Forrester Research, Inc. in Cambridge, Mass., said there isn't much evidence of Exchange in the systems integrator channel now — an indicator of how fast firms are ordering the software.

Also, International Data Corp. in Framingham, Mass., is about to release a report that pulls back its earlier prediction that Exchange would sell more than 5 million seats this year.

One integrator in Ohio said his firm has had problems with some Windows NT-based applications, including Exchange, and won't resell the product yet.

And one Microsoft Mail user, like many still planning their migration off PC LAN-based systems, is waiting for the Exchange 4.1 upgrade due later this year. That upgrade will add more Internet connectivity and solidify any missing features left over from the original release.

"I am holding back for [Exchange] 4.1," said Rick Clark, an electronic mail administrator for the city of Tacoma, Wash. "[It] will eliminate a lot of fundamental issues that 4.0 couldn't quite eliminate."

Some users turned away from Exchange because of what they said were scalability issues (see box above).

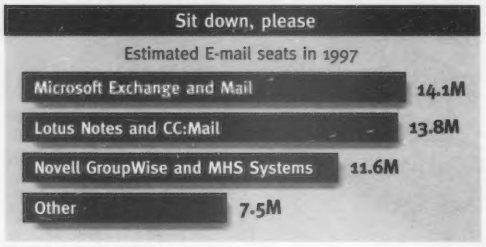
Because the National Board of Medical Examiners in Philadelphia runs some Windows NT Servers, Microsoft gave it a push to move to Exchange, said Steve Lopez, information systems manager. But he said he decided to stay with Novell, Inc.'s GroupWise because "under a certain message load, [Exchange] just does not scale."

But "Microsoft does give folks a lot of performance management and simulation tools ahead of time to look at various configuration scenarios," said Gary Rowe, principal at Rapport Communications in Atlanta.

The need to set up Windows NT domains for Exchange requires that users do a lot of this legwork up front, said Doug Couch, director of system support services at Kentucky's Department of Education. The state's Exchange network is one of the largest installations, and Couch said scalability hasn't been a problem, even with thousands of users and 200 Exchange post offices.

Hitting the wall

Microsoft officials said their testing of Exchange's scalability took into account Exchange's 16M-byte message storage limit on the server. Microsoft has a white paper on its World Wide Web page (www.microsoft.com/Exchange/evalgd.htm) that outlines user-per-server storage limits based on various server configurations.



Source: The Yankee Group, Boston

Cost of backbone switches during price war

Vendor	Product	Switched Ethernet (per port)	Fast Ethernet (per port)
Cabletron	MMAC-Plus	$666	$1,499
Bay Networks	System 5000	$537	$897
Cisco	Catalyst 5000	$416	$1,039
UB Networks	GeoLAN/500	$250	$600
3Com	ONcore	$450	$1,250
	LANplex 6000	$1,000*	$999

*Includes FDDI backplane connections

Ethernet users await price war

By Bob Wallace

War is hell, unless you're a user.

The overcrowded switch market is in the early stages of what analysts expect will be a fierce and protracted price war. That could mean huge savings for users who can afford to wait.

The skirmish escalated last week as UB Networks, Inc. and switch powerhouse Cabletron Systems, Inc. confirmed plans to slash prices on switching modules for their data center systems by 50% and 60%, respectively.

Nowhere but up

Analysts predicted that the battle will only intensify.

"Vendors must and will continue to cut prices so they can justify the value and higher price of more advanced and noncommodity high-speed technologies such as ATM and Gigabit Ethernet," explained Skip MacAskill, a senior research analyst at Gartner Group, Inc., a consulting and research firm in Stamford, Conn. "Users win big as a result."

For example, an information systems manager who waits until December, when UB will ship the new switching module for its GeoLAN/500 data center system, will pay $250 per switched Ethernet port, compared with $500 now.

And IS managers who wait as long to buy Cabletron's new Ethernet switching modules for the MMAC-Plus data center switch will pay $666 per switched Ethernet port, compared with $1,625 per port now.

Cabletron's prices were on the high end, but the company's price cut is expected to trigger a response from its chief rivals, which want to maintain their price advantage (see chart).

Data center switches break up bandwidth bottlenecks in backbone networks and provide pipes to servers that are bigger than pipes provided to desktops.

"Corporate America has been holding off on switching in anticipation of a price war," said Peter Pollack, vice president of new technologies and architectures at Showtime Networks, Inc. in New York, a Cabletron and Fore Systems, Inc. shop.

"ATM and Gigabit Ethernet are maturing and are the next wave for backbone networking," Pollack said. "Switched Ethernet is already very mature. That's why pricing is plummeting." Showtime uses Asynchronous Transfer Mode (ATM).

"These price cuts are changing our planning for deploying switched Ethernet," said Virgil Palmer, manager of computing and telecommunications infrastructure services at Air Products & Chemicals, Inc. in Allentown, Pa. "We're now beginning to look at running switched Ethernet to all of our desktops instead of just to our servers."

Palmer cited his firm's move from single-processor to multiprocessor servers, its migration from 386- and 486-based PCs to 133-MHz Pentium-based PCs and the gradual emergence of multimedia applications as reasons for needing bulk bandwidth.

"These price cuts sound like enough to make IS managers skip over shared-media Ethernet to switched Ethernet for all new installations," said Blaire Sanders, a senior member of the technical staff at Texas Instruments, Inc. in Plano, Texas. "Users need to look seriously at these and future price cuts and start working up proposals for implementing switched Ethernet."

Token Ring struggles to keep up. See page 56.

Vendors cook up more palatable DCE dishes

By Craig Stedman

Having largely failed to win customers with a full frontal assault, DCE vendors are adopting a Trojan horse strategy.

Companies such as IBM and Hewlett-Packard Co. are toning down efforts to sell raw versions of the Open Group's Distributed Computing Environment (DCE) software. Instead, they are trying to hide pieces of DCE, such as its security features, inside packages targeted at specific applications.

And customers who have struggled to develop DCE applications from the ground up are breathing sighs of relief.

"This is what we've been asking them to do," said Peter Barclay, manager of client/server services at Caterpillar, Inc. in East Peoria, Ill. "We don't like having to deal with DCE at the level that we have to deal with it today."

Caterpillar began running its first production DCE application last month. But the technology requires abstraction feats "that our developers just aren't used to doing," Barclay said.

Hiding DCE under the covers are "the magic words," agreed Mike Danley, a distributed computing consultant at Motorola, Inc.'s corporate computer services unit in Scottsdale, Ariz.

Motorola put DCE into production several months ago to link disparate manufacturing systems in a semiconductor plant. But the development process took two full years to complete, Danley said.

DCE was a pioneering method for distributing processing across a combination of systems, from PCs to mainframes. But the technology has been held back by a variety of factors, with complexity and cost topping the list.

Vendors at a DCE developer's conference in Boston last week said they hope to reduce implementation headaches by turning DCE into a means to an end rather than an end in itself.

For example, IBM is focusing on bundles in which DCE "just happens to be one of the components," said Phyllis Byrne, vice president of distributed systems at IBM.

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Novell's Web server rides fast Green River current

By Laura DiDio

Novell, Inc. may be late in the World Wide Web server race, but its entrant is winning applause for its speed, directory integration and intranet capabilities.

NetWare Web Server 2.5 will be included in the so-called Green River upgrade of the network operating system, which is due next month.

Web servers

Because the NetWare Web Server is bundled with the core NetWare 4.11 operating system, users can publish and access information on corporate intranets and the Internet, claimed William Donahoo, Novell's senior director of product marketing.

Ten users interviewed by *Computerworld* said they were pleased that Novell is finally bundling the NetWare Web Server directly into NetWare 4.11. That will allow them to use the underlying NetWare platform to create corporate intranets with resources that can be viewed and managed via Novell Directory Services (NDS).

"It looks real good," said Jim Pappas, a network specialist at WHDH-TV in Boston. "We wanted a straightforward, uncomplicated approach to building a corporate intranet that can also let our end users easily access the Internet. Deploying NDS in conjunction with the NetWare Web Server will let us use one set of user log-ins for all our applications."

"We estimate it will halve administration and configuration time," Pappas added.

The speed and integration that comes with NDS are powerful lures. Several users — including some who use Microsoft Corp.'s Windows NT Internet Information Server (IIS) in mixed environments — said they may consider switching to the NetWare Web Server.

"The ties to NDS and the speed eliminate my two biggest administration woes," said Phillip Dunham, a network technician at Holmans of Nevada, a Las Vegas-based retailer. "We'd be willing to displace the IIS Server because Cairo [Microsoft's enterprise directory] won't be out for a year," Dunham said.

Josh Turiel, director of information services at Ad Life Marketing, Inc. in Norwood, Mass. — another mostly Windows NT Server shop — said the sheer speed of the NetWare engine may be too good to pass up.

"NetWare is the fastest core services engine out there. And that means I don't have to worry about taking a performance hit when my users deploy the NetWare Web Server," he said.

But analysts took a more critical view of the NetWare Web Server. They said Novell's late delivery leaves the Orem, Utah, firm with some serious catching up to do.

"This is not the second coming. Novell had to fix serious problems with earlier versions of the NetWare Web Server," said analyst David Strom, president of Strom Consulting, Inc. in Port Washington, N.Y. "Microsoft has included IIS as part of the [operating system] for the past nine months, which is equivalent to two Web years. Novell is seriously behind the eight ball in the Web server arena."

"So what?" Turiel countered. "There's barely a product in this industry that isn't late shipping. It's here now, and that's all I care about."

NetWare Web Server 2.5 supports:

- The NetBasic Scripting engine
- All common World Wide Web services, such as Java applets
- Browsing of NDS to access network information
- TCP/IP and Novell IPX protocols
- Access to Oracle and Lotus Notes databases

HP to ease integration of Unix, Windows NT

By Jaikumar Vijayan
ANAHEIM, CALIF.

Hewlett-Packard Co. is making room at the enterprise table for Windows NT.

In a nod to Windows NT's growing popularity, HP last week detailed a rapidly evolving plan to tie NT platforms to Unix-based enterprise servers.

HP will move to a unified Windows NT/Unix world over the next two years with:

- Integrated networking, messaging, application development, management and security
- HP/Intel Merced architecture that supports Windows NT and 32- and 64-bit Unix

HP will push Unix higher into the enterprise with:

- 64-bit PA-8000 processor architecture
- 64-bit HP Unix and support for large physical memory and file sizes

Highlights of the plan, which were outlined at last week's HP World show here, include common networking protocols, integrated messaging, common application development environments and integrated systems management software.

The moves are aimed at easing integration and management hassles for Unix users who seek to migrate enterprise applications to Windows NT platforms, analysts said. In the past few months, HP has also plotted a long-term processor and operating system road map that is ultimately expected to result in a tightly unified hardware and software environment that runs Unix and Windows NT across the enterprise (see chart).

HP, the largest vendor of Unix systems in the world, has been increasingly pressured in the low-end Unix market by the dramatic price/performance improvements of Pentium-based Windows NT servers.

For instance, HP's Intel Corp.-based symmetrical multiprocessing Windows NT servers have begun to poach on much higher-priced, low-end HP 9000 Unix territory.

"There is no doubt that Unix and Windows NT are going to coexist" in the enterprise, especially as aggressively priced Pentium Pro-based servers start shipping in volume, said Lawrence Panatera, vice president and chief information officer at Snap-on, Inc. in Kenosha, Wis.

"HP has recognized . . . that NT will be a significant part of the enterprise, and it is making a full-court press" to make the layered software for people who actually are going to run the mixed environment, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester N.Y.

Toward that end, HP last week announced several ongoing efforts under its so-called IT Collaboration program umbrella, including the following:

- Native Windows NT support for HP's OpenView system and network management software. Such support lets users manage Unix systems from Windows NT platforms.
- An integrated messaging environment that uses HP's OpenMail as the messaging backbone.
- Distributed application development and access with HP ORB Plus 2.0 that integrates object modules across Unix and Windows environments.

HP also has already announced an authentication server called Praesidium, which supports Windows NT and Unix and facilitates capabilities such as a single logon.

Integration such as that will greatly simplify a network administrator's job, said John Montgomery, manager of technology integration at Marine Terminals Corp. in San Francisco.

"We have a multiple-platform shared environment where NT is going to play an increasing role, and it would be great if we had one platform to manage it all," he said.

HP and others smooth road for patches. See page 45.

HP CEO: Hell no, Unix won't go

HP CEO Lewis Platt spoke with *Computerworld* on a wide range of issues that the company faces, including the following:

On the emerging roles of Windows NT and Unix in the enterprise: NT is going to be a very important operating environment in the enterprise. But I also think it will coexist with Unix for a very long time. NT is coming up from the bottom, [and] there is no question it has stolen some of the bottom end of the Unix market as it has come along. NT will continue to move up and take on bigger jobs, but it will be a very long time before we get to the enterprise server level.

CEO Lewis Platt: *We're leading; we're staying*

On HP's NT/Unix strategy: Most people have a hard time understanding what I think is a really simple story. We are going to provide great NT servers. We are going to provide great Unix servers. The most common environment [in the next few years] is going to be mixed NT/Unix. Our goal is to be the best at integrating both.

On the future of Unix at HP: A lot of people ask me if we are abandoning Unix. Hell no, we are not abandoning Unix. We are making major investments in it; we are the leader in it. You never abandon something in which you are a leader.

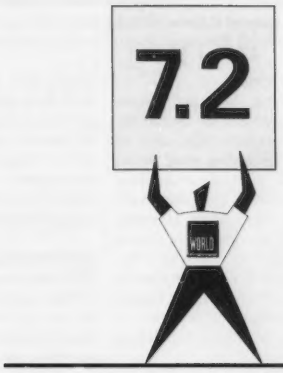
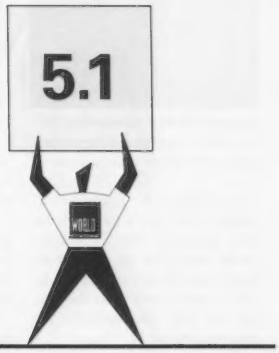
—Jaikumar Vijayan

Developer/2000™ Scores Highest in InfoWorld Product Comparison

The rigorous InfoWorld Product Comparison recently tested Oracle Developer/2000 and Microsoft Visual Basic to find which one "wouldn't crack under the pressure of scaling to the enterprise." After a battery of tests, InfoWorld concluded: "Our standout winner, Oracle Developer/2000..."

InfoWorld Product Comparison Score

Enterprise Development Tools

	Oracle Developer/2000	Microsoft Visual Basic
		
InfoWorld on Scalability	"Developer/2000 performance... convinced us that it was prepared to scale..."	"...Visual Basic just didn't have... scalability."
InfoWorld on Team Development	"Developer/2000 leads the pack in data-repository-based development."	"We feel this is an area where Visual Basic needs work."
InfoWorld on Database Programming	"Developer/2000 is packed with tools that make it the strongest... in transaction building."	"Visual Basic... transaction-building capabilities weren't ready for enterprise-wide applications."
InfoWorld on Reusability	"We were quite impressed with the wide range of object-reusability tools offered by Developer/2000."	"...Visual Basic's object reusability features (are) inefficient and tedious."
InfoWorld on Productivity	"... Developer/2000 is packed... for productivity. Developer/2000's most notable tool... is its unique drag-and-drop application partitioning capability."	"...Visual Basic... lacked the perks provided by Developer/2000."

For more information and a copy of the report, **call Oracle at 1-800-633-1071, ext. 10051** or find us on the Web at **http://www.oracle.com**

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InfoWorld Product Comparison results as of June 17, 1996.

Apple moves Mac OS to front burner

By Lisa Picarille
BOSTON

CEO Gilbert F. Amelio last week shuffled Apple Computer, Inc.'s priorities, moving the need to get new system software enhancements into the hands of users ahead of a promised Common Hardware Reference Platform (CHRP) machine.

Stryte Bates

Apple's Gilbert F. Amelio *says Apple will ship new operating system enhancements every six months*

At Macworld Expo/Boston, Amelio said Apple will release new operating system enhancements every six months rather than wait until next summer to deliver a major revision of the Mac OS — the long-awaited, oft-delayed Copland.

"They need to get something, anything, out the door," said Tim Bajarin, vice president of Creative Strategies International, Inc., a San Jose, Calif., market research firm.

The difference between this new Mac OS release strategy and a very similar one detailed at Apple's Worldwide Developer Conference in May is that the company doesn't plan to have a final upgraded version of the Mac OS that will tie together the previously incremental releases.

Instead, the Mac OS will just continuously evolve, according to Amelio.

Architectural concerns

Analysts applauded Apple's decision to get new operating system enhancements out the door as soon as they are ready. But most observers questioned just how Apple plans to make major architectural changes to the Mac OS, such as adding support for preemptive multitasking and multithreading.

"Those are not changes that can be added incrementally," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.

Yet some Macintosh users said they prefer not to wait for a "megarelease" of the Macintosh operating system.

Stryte Bates

Apple announced at Macworld Expo/Boston *that operating system enhancements will be released ahead of a promised CHRP machine*

"Releasing bits and pieces should mean that the overall system will be more stable, since we will only be adding small pieces instead of the hundreds and hundreds of new features that would be in a totally new operating system. It also gives us a chance to get acquainted with new features," said Thomas Geary, an application specialist at SDK Healthcare Information Systems, a developer of medical software in Boston.

If this latest operating system rollout plan goes well, Amelio said, Apple may move to quarterly updates. A release called Harmony, due out in December, is the first of such releases. The improvements include built-in QuickDraw 3D and some cosmetic interface changes [CW, June 3].

CHRP delay

With system software getting top billing, something has to be put on the back burner. That would be Apple's plan to deliver a machine based on the CHRP specifications jointly developed by Apple and IBM.

Amelio said at a press luncheon last week that Apple's CHRP machines, slated for delivery at the end of this year, might not be out until early next fall.

Features are vital

That's OK with some observers and users. Industry watchers said the release of new operating system features is crucial if Apple wants to satisfy Macintosh users who have been waiting several years for the company to release Copland, its next-generation microkernel-based operating system.

"It is very important for them to put out a quality operating system," said Joel Kitchens, Macintosh network coordinator at Publix Super Markets, Inc., a Lakeland, Fla., chain of grocery stores that has 30 Macintoshes and more than 500,000 PCs.

"CHRP is less important because there are other alternative ways to run applications from other platforms on a Mac," he said.

Kitchens is an example of a user in a mixed shop who feels pressure to constantly justify use of Macintosh technology. That is why he says it is important to him that Apple deliver updates more quickly and consistently.

Internet E-mail packages keep internal needs in mind

Revamped products begin to challenge market leaders

By Tim Ouellette

Electronic mail over the public Internet is as common as a hot day in August. But several announcements this week will make Internet-standard E-mail a viable option for internal business communications, too.

Qualcomm, Inc. and Software.com, Inc. are inking a deal that will give users one place to go for a full-fledged, internal E-mail system based on Internet standards.

Internet mail vendors are adding more features to their packages to lure companies that are used to the robust features of mature, proprietary E-mail systems.

For example, Ipswitch, Inc. and NetManage, Inc. are upgrading their Internet E-mail server and client, respectively.

The moves are important as more organizations are moving off their aging proprietary E-mail packages from Lotus Development Corp., Microsoft Corp. and Novell, Inc. The Internet mail packages offer simplified management and flexibility and don't require complicated gateways among different systems.

Stamp of approval

The Internet Engineering Task Force has workgroups mulling the following Internet mail standards:

- Mail extensions: proposals to extend existing Simple Mail Transfer Protocol and Multipurpose Internet Mail Extension
- Message receipt notifications
- Privacy-enhanced secure Internet mail
- Internet directory services

Efficient management

"[Internet mail] is almost painless to administer, and you can add as many users as you want," said Mike Lyman, a software engineer at Aegis Research in Huntsville, Ala. Aegis uses Software.com's Post.Office Internet mail server as the backbone for all its internal and external E-mail.

"Unless you need the extra features, I see no need to go to a proprietary system," Lyman said.

But there's the rub. Some users want the extra features found in proprietary packages, such as receipt notifications and ease-of-use functions, along with security, directory capabilities and reliable support from a major vendor.

"In large corporations, E-mail has gone from being a tool deployed on the department level to a minimum requirement for doing business," said Eric Brown, an analyst at Forrester Research, Inc. in Cambridge, Mass. "CIOs are going to take a low-risk approach to making sure E-mail is scalable and reliable."

More mail

Morgan Stanley Research predicts that there will be 30 million Internet E-mail users by next year.

The Qualcomm/Software.com deal announced today tries to ease this concern for reliability by giving users one place to go for a complete internal/external E-mail system based on Internet standards.

San Diego-based Qualcomm will develop a combination of its market-leading Eudora Internet mail client with a new mail server based on Software.com's Post.Office.

The first products will ship under the Eudora brand name later this year.

Ipswitch in Lexington, Mass., plans to upgrade its IMail Server for Windows NT to include self-monitoring capabilities and other management features that give NT administrators more control over E-mail server resources.

Also, NetManage in Cupertino, Calif., is shipping a beefed-up, standalone version of its ZMail Fro client. ZMail, which will include an integrated news forum reader, is addressing users' growing interest in the combination of groupware and E-mail features, an area where Lotus, Novell and Microsoft are well ahead.

Some users say a combination of the two — external Internet mail and proprietary internal mail — is still the best policy.

The Oklahoma Corporations Commission is using Ipswitch's IMail Server for Internet mail access, but all users will go through Novell's GroupWise E-mail software to get there, said Alan Lacy, senior computer services manager.

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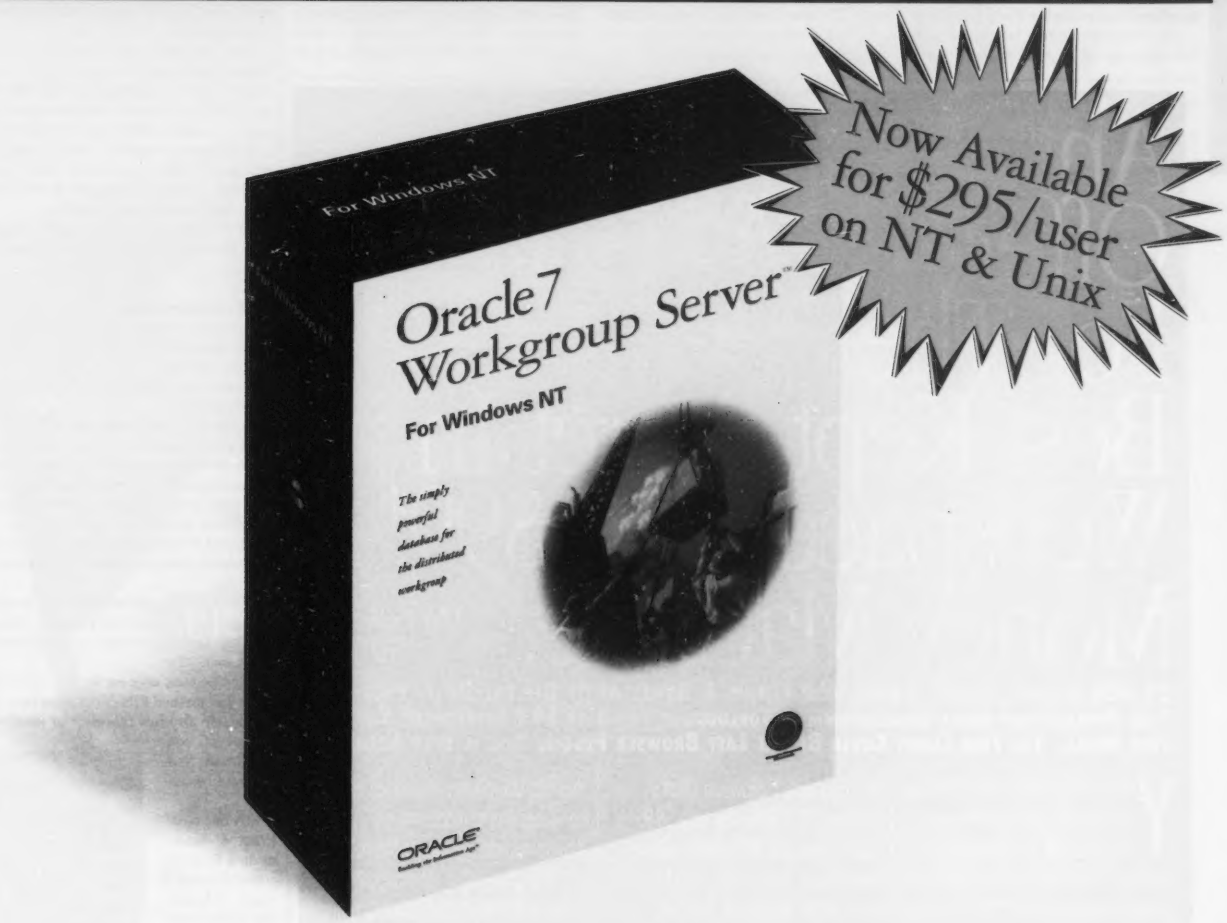

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Realtors may board up Internet site money pit

By Thomas Hoffman

The roof has caved in on the National Association of Realtors' (NAR) ambitious project to sell real estate over the World Wide Web.

The association's 680 board members will vote Aug. 26 on whether to scrap the project. The group spent a whopping $13 million since May 1994 to develop the Realtors Information Network (RIN) only to achieve dubious results (www.realtors.com). The board last month poured another $950,000 into the Internet money pit to cover network costs through August.

Most of the service's cost overruns are due to the fact that RIN was never intended to be an Internet site for the masses. It initially was conceived as a proprietary database with Realtor-only access to property information. But the explosion of Web-based sites forced RIN management to refocus the project midstream, according to Rick Snyder, president of the California Association of Realtors in Los Angeles.

"The technology changed the environment on them, and they've had a difficult time catching up," Snyder said.

Even though it has added more than 400,000 real estate listings from 27 states since the service was launched last November, RIN has suffered from overspending and fierce competition from low-cost rivals.

For example, Almon R. "Bud" Smith, the acting CEO and president of RIN, found that the group had $300,000 to $400,000 more in bills than it had in funds.

Smith took control of the project in June after RIN's board fired then-CEO Edward J. Evans.

The competition

Meanwhile, Snyder said, the California realty association has spent in the "low six figures" to launch and maintain its own Web site, the California Living Network (ca.living.net).

Unlike RIN, which manages its own site, the California group pays Listing Link, a Santa Monica-based online property management service, to oversee its Web site. And the California Living Network, which lists 75% of homes for sale in California, is hot-linked to Yahoo, Inc.'s San Francisco/Bay Area community, where it picks up extra traffic.

RIN "cost so much because [RIN project managers] tried to do everything — create, own and sell the service — themselves," Smith said.

Since he took over earlier this summer, Smith has slashed RIN's staff from 18 to 10 people. He also has cancelled or modified dozens of contracts with vendors and consultants.

Change of plans

Most of the cost overruns at Realtors Information Network are due to the fact that it was never intended to be an Internet site for the masses.

RIN has hired Ernst & Young to do a financial audit to determine whether any of the more than 100 vendors and consultants on the project have defrauded the organization, according to a spokesman for NAR. Those findings should be released before the board meeting, the spokesman said.

Some of the vendors with whom RIN has worked include Iconics in Maryland, which developed RIN's Web site, and Reach Networks, Inc. in New York. RIN's Internet access service provider.

The financial audit is expected to uncover how many sales the site is generating and whether the site is worth keeping.

NAR's board also will decide whether RIN should partner with an organization that can manage the site effectively.

"People have spent ungodly amounts of money to set up Web sites, but this is a surprising amount of money for this industry," said Phoebe Simpson, an analyst at Jupiter Communications, Inc. in New York.

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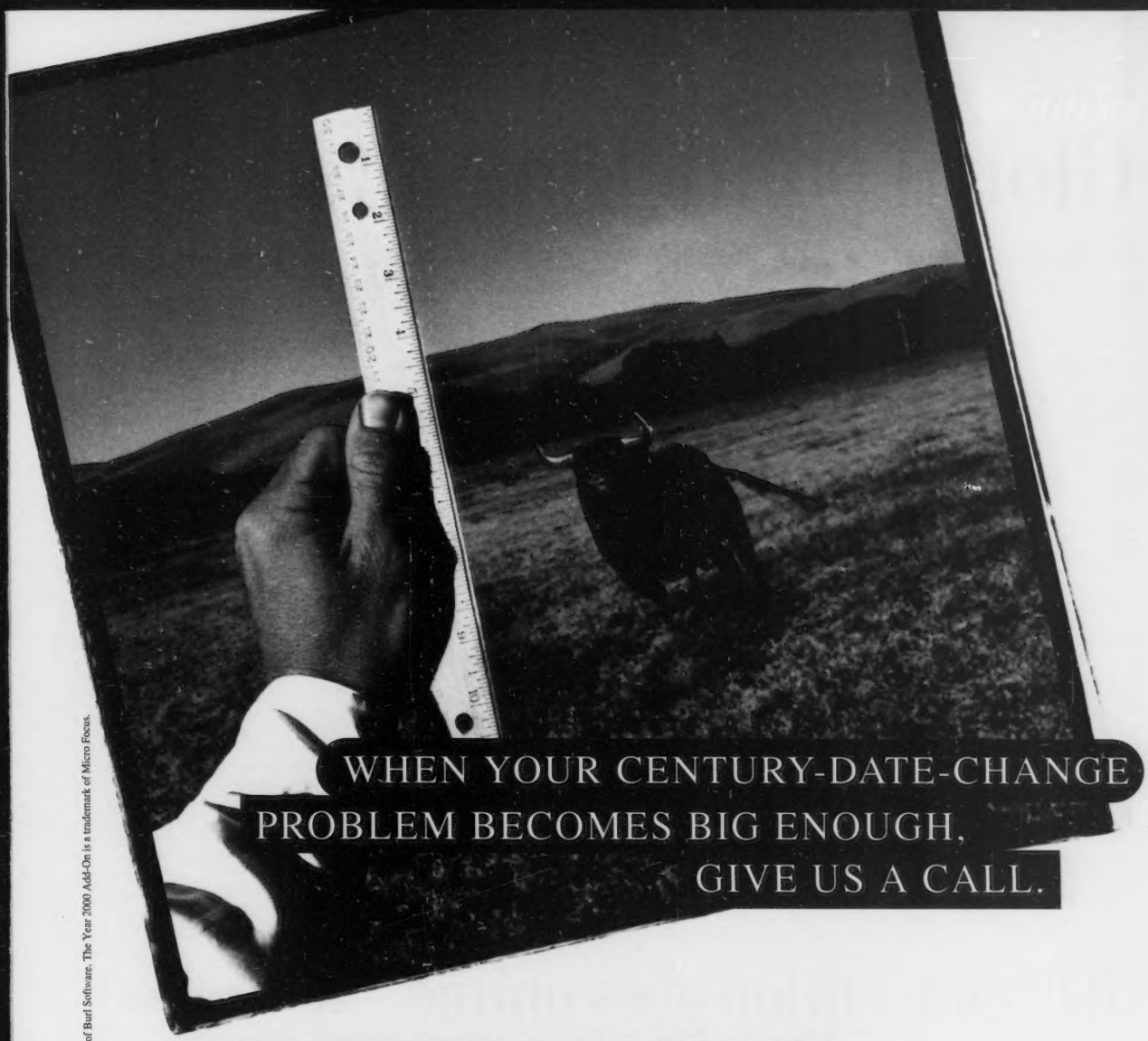

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Global politicking hits Web

Reaching voters, raising funds are key benefits

By Torsten Busse
MUNICH, GERMANY

Political parties around the globe are discovering that the World Wide Web offers a fresh, direct and up-to-the-minute way to communicate with voters.

The Web — the graphical corner of the much broader Internet — is giving political parties more than just a way to reach potential voters. It is also helping them stay in touch with citizens living abroad and provide unfiltered communication of party goals, according to party officials from several countries.

Democratic National Committee site (www.democrats.org)

Clinton/Gore '96 Campaign (www.cg96.org)

Republican National Committee site (www.rnc.org)

Online handshake

As the U.S. presidential campaigns kick into full gear this week, with the Republican National Convention opening in San Diego (see story below), both major parties have added Web campaigning to their arsenals.

"The Web site is just another piece of campaign strategy," said Adam Sohn, director of technology for the Clinton/Gore '96 Campaign (www.cg96. org). "We are taking it really seriously."

Yet whether political parties worldwide are gaining voters because of their presence on the 'net remains an issue of debate.

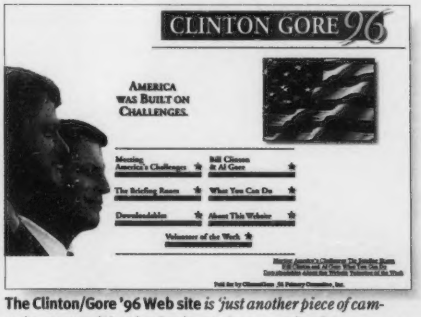
"I don't believe the site really wins new electors. It's just a shop window for political ideas," said Italy's Antonio Palmieri, the man responsible for the Forza Italia site (www.forza-italia.it).

Many candidates in this year's elections for the U.S. Senate and the House of Representatives can be found on the Web. And although they may not gain that many voters, they are building intelligence about potential supporters and collecting financial contributions.

"We assembled a database of supporters who hang out on computers whom we could easily reach via E-mail," said Colorado Democrat Paul Weissmann, who ran for a U.S. Senate seat (www.databahn.net/senpaul).

Using a Netscape Communications Corp. Commerce Server, the Democratic National Committee collected $5,000 in contributions in a single month, said Roger Schneider of Traveller Information Service, the Internet producer for the Democratic National Committee site (www.democrats.org).

Meanwhile, the Republican National Committee is enabling remote participation via the Web at its convention. "Cyberdelegates" who access the Republicans' Web site (www.rnc.org) will be able to participate in live forums, view news and express their opinions via electronic mail to the convention's platform committee.



The Clinton/Gore '96 Web site *is 'just another piece of campaign strategy' that fund-raisers take very seriously*

Cyberdelegates can check out party-related information, including delegate allocations by state, presidential primary dates and significant dates in convention history.

Worldwide trend

The U.S. is only one of many countries where campaigning for political office is now conducted on the Internet. During recent election campaigns, candidates sought voters on the Internet in Taiwan, Poland, France, Italy and Germany, to name a few.

"The Web is a valuable tool for opposition parties because it is not under local control," said Yugoslavia's Democratic Party Vice President Miodrag Perisic. "We do not have access to the electronic media."

Reaching out to a whole new generation of voters — and looking cool in the process — is another big attraction for politicos.

"You don't have to organize anything special to reach young people on the 'net because they're already there," said Anna Siebenborn, who manages the Internet activities of Germany's main opposition party, the Social Democratic Party (www.spd.de).

This story was reported with assistance from IDG News staff around the world.

Busse writes for the IDG News Service.

GOP convention goes online

By Michael Goldberg

To delegates at this week's Republican National Convention in San Diego, being on the floor for the proceedings may be just as much fun as surfing the World Wide Web at home with a multimedia PC.

In fact, the two could be strikingly similar if AT&T Corp. and its sister companies, Lucent Technologies, Inc. and NCR Corp., succeed in creating what they and Republicans are calling "the first online convention."

The convention floor itself will have a PC network that links each state's delegation to the speaker's podium — for tracking speakers' texts and passing messages back and forth.

Information kiosks around the convention center and two adjacent hotels will tell delegates where to eat and what's worth visiting in San Diego. A frame-relay link for party operatives to communicate between the convention and Washington headquarters is in place. And enough telecommunications cable to wire "a small city" will carry voice, video and text information for delegates and the media to disseminate information long-distance, an AT&T spokesman said.

On the homefront

Meanwhile, for the folks at home, the GOP plans to broadcast the entire convention on its Web site (www.convention96.rnc.org/live.htm).

Anne Gavin, a spokeswoman for the convention, said plans call for live broadcasts of convention goings-on, online chats with Republican movers and shakers and other activities.

It is an effort "to be more inclusive and participatory" for people unable to attend, Gavin said.

Not to be outdone, the Democrats also plan a Webcast of their proceedings when they meet in Chicago the week of Aug. 26 — also with the help of AT&T.

At Chicago's United Center, delegates will be able to record floor votes via a LAN of Pentium-based PCs, each with touch-screen capabilities. This "delegate communications system" also will give attendees access to the Democratic National Committee's Web home page. A delegate with a poor view from the floor can watch the real-time video presentations of the convention from the Web page (www.dncc96.org).

And yes, AT&T has heard warnings based on IBM's embarrassing experience at the Atlanta Olympics, when information systems distributed incomplete and erroneous information to the media [CW, July 29].

"Everything that we've been providing at the convention has been thoroughly tested. We've taken it to the point of bumping into things," said Stan Gorski, director of the Democratic National Convention at AT&T and Lucent. "I am confident it will work without fail."

By the numbers

AT&T and its sister companies, Lucent Technologies and NCR, will provide the following at the GOP convention in San Diego:

- **15 million minutes** of long-distance service
- **1 million feet** of cable to provide telecommunications among the San Diego Convention Center and two adjacent hotels
- **15,000 telephones**
- **500 computers**
- **150 computer modem connections** in the press room
- **150 employees** and **200 volunteers**
- **20 computer kiosks** with local dining-out and tourist information
- **1 frame-relay hookup** to Washington party headquarters

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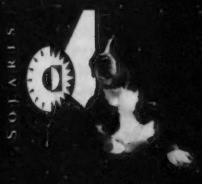

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SIS-1

Facing 2000 alone

Overtaxed consultants get choosy; Cobol skills win big bucks

By Thomas Hoffman and Julia King

Chief information officers who figure they can simply outsource the bulk of their organization's year 2000 testing and reprogramming should think twice: Huge demand for services in the next two years is expected to overwhelm vendors, who are already turning down such assignments.

IBS Conversions, Inc., for example, recently passed on a $15 million job to convert more than 15 million lines of PL/1 code for a large insurance company. A key reason: The client was unwilling to let IBS run a pilot project, thereby making the outcome too risky, said Don Fowler, a year 2000 solution architect at the Oak Brook, Ill., organization.

The probable result is that more user companies will be left to fend for themselves on the year 2000 front.

The lucky users who find help will have to pay big. Gartner Group, Inc. in Stamford, Conn., estimates that consulting and contractor costs for year 2000 work will rise between 20% and 50% per year beginning in 1997 as demand for those services swells. Contract programmer salaries are going to rise dramatically, said Joe Allegra, president of Princeton Softech, Inc., a Princeton, N.J.-based year 2000 tools developer.

Social Security's Kathleen Adams: *It is tough to persuade management to invest in year 2000 conversions*

ITT's David Starr: *He is dodging the bullet by replacing $40 million worth of mainframes*

Panic is over

"A year ago, Cobol programmers were getting a little panicky," said William A. Grady, a recruiter at Romac International, Inc. in Boston. But now their skills are in such high demand, it isn't outrageous for those technicians to command $80,000 to $100,000 as hired guns for millennium conversion projects, Grady said.

One of the biggest challenges for CIOs in the public and private sectors is persuading upper management to devote more resources and money to millennium conversions, according to Kathleen Adams, associate commissioner for systems design and development at the Social Security Administration in Baltimore. Adams is overseeing year 2000 programs at the agency.

But some CIOs say the doomsday warnings about labor shortages are just hype. "I don't see a scarcity of [mainframe talent]. What I do see are an awful lot of consulting firms running around trying to spread terror," said David Starr, CIO at ITT Corp. in New York.

Maybe. KPMG Peat Marwick hasn't turned down any year 2000 work — yet. But its 400-member testing team will "probably be in the same boat as other [vendors]" and eventually become overcommitted, predicted Richard M. Kearney, KPMG's partner in charge of its Global Year 2000 unit in Boston.

Some forward-thinking information systems chiefs have dealt with the staffing issue by phasing in work along with client/server projects and by mixing in-house resources and outside expertise.

Starr, for example, is dodging the bullet by replacing $40 million worth of mainframe systems with $2 million worth of Oracle Corp.'s client/server financial software. But that remedy won't work for organizations that have to continue to run their core business functions on legacy code.

The Social Security Administration attacked the problem by planning ahead. Scheduling year 2000 work alongside its migration to client/server "is a matter of survival to us," Adams said. The agency has completed one-third of its year 2000 work and is on schedule to finish by the end of 1998.

The Social Security Administration is an exception to most organizations; it has already spent 100 person-years fixing its IBM Cobol/CICS systems under a $30 million, in-house year 2000 effort it launched in the early 1990s. "If you start late, you're going to have a real crunch," Adams warned.

But even front-runners such as Union Pacific Corp., which began recruiting Assembler programmers in April to tackle its transportation control systems, have had difficulty finding people through its contract programming partners and help-wanted ads, said Jim Fox, director of IS at the Omaha-based railroad.

Assuming they can find the personnel they need, organizations should begin hiring contract programmers now before supply and demand blows their salaries skyward, experts said. That is especially true for programmers who have skills in more obscure languages, such as Algol, PL/1 and Mumps. Fowler said Assembler programmers in the Southeast are commanding $75 per hour and up (see story below).

Companies that can afford to tap in-house expertise stand to gain from their staffs' familiarity with the systems, which should reduce the time it takes to inventory date gaps.

Plan ahead

Industry pundits estimate that demand for Cobol and other contract programmers will begin to outstrip supply by mid-1997. Here are a few things your organization can do to ensure that you have enough resources:

- Offer long-term employment agreements and other financial incentives to keep contract and in-house programmers from jumping ship for higher offers.
- Don't procrastinate about outsourcing year 2000 testing and reprogramming.
- Begin searching *now* for contract programmers. Cobol and more specialized programmers who are getting $60,000 per year for year 2000 work are expected to command $80,000 to $100,000 once the market starts to shrink.

— Thomas Hoffman and Julia King

Object programmers hard to find, keep

By Sharon Gaudin

A programmer at a payroll processing company who was told that learning object-oriented development would be a waste of time is now developing with objects — but at another company and for a lot more money.

And in Miami, a senior systems integrator at Florida Power & Light Co., who was trained in object-oriented programming about two years ago, has so far resisted offers from other companies and the chance to double his salary.

Hot careers

Why the sudden popularity in object-oriented programming? Although it is gaining momentum and mind share, the sudden growth has resulted in a shortage of object expertise, forcing a growing number of companies to retrain existing staff in this new technology. But that is only half the battle. The second challenge lies in keeping them onboard once class is over.

Not that getting programmers up to speed is a cakewalk. For starters, it isn't an inexpensive undertaking. Information systems executives said training generally ranges from weeklong on-site classroom sessions to six months' worth of periodic classes and off-site training. Most of that is augmented with highly paid consultants brought in to get projects moving. An executive at Chubb & Son, Inc. in Warren, N.J., said on-site training costs about $1,500 per student if consultants aren't involved and more if they are.

Hot commodity

For example, Bankers Trust Co. in New York, a giant in the commercial finance industry, started turning to objects two years ago. Currently, 20% to 30% of new projects are developed using object technology, said Nurul Choudhury, vice president of consulting services at Advanced Technology Consulting, a division of Bankers Trust. He added that programmers with object-oriented experience are generally hired at a 20% to 30% higher salary.

Obviously, firms would much rather find programmers with object technology experience.

Ellen Conway, a technical recruiter for BFR Systems, Inc., a computer consulting company in Liberty Corner, N.J., said about 75% of her job is focused on finding programmers with object-oriented experience. "That's pretty much the hot path," she said.

The result is that companies such as Bankers Trust end up being not only the hunted but the hunters as well. Choudhury said other companies are stealing his retrained programmers away as fast as he steals some for himself.

Frank Nazzaro, now a lead programming analyst at Bankers Trust, approached reluctant bosses at a payroll processing company about learning object technology. These days he makes more than double the approximately $50,000 he was earning before. And he could probably do better.

"I will get a call [about a job offer] two to five times a week," he added.

The trick then for IS managers is to keep object-oriented programmers on the payroll without busting it wide open. There are several options.

Eye-opener

Salary examples from one New York-based company

Job	Salary
Object-oriented programmers	$72,000 to $78,000
Other types of programmers	$60,000

Fostering loyalty doesn't have to come in the form of a large paycheck, according to Karen Boucher, a market analyst at The Standish Group International, Inc. in Dennis, Mass. She noted that some companies offer sabbatical programs, giving workers up to six weeks per year off, but only after a year or two of employment.

Flexibility is often the key, added Nathaniel Palmer, an analyst at Delphi Consulting Group in Boston. "Certainly, [programmers] aren't held to the same 9-to-5 standard," he said. "It's true of any creative field, and there certainly is a creative element with programmers."

Incentives are good ideas, but money ultimately is king, said Evan Quinn, an analyst at International Data Corp. in Framingham, Mass. He cited programs where employees receive stock options that don't mature for five or six years. That keeps workers on board, at least long enough to cash in. As he put it, "Money talks, and nobody walks."

Year 2000

CONTINUED FROM COVER 1

tion officer at Fireman's Fund Insurance Co. in Novato, Calif., said Fireman's had to redo all of its policy renewal programs that run on PCs and workstations. And the good news, he said, is that because the company began to assess problems early, things are in good shape: There are only 10 person-years of work ahead.

At risk are homegrown applications that were built using products such as IBM's VisualAge or Microsoft Corp.'s Visual Basic, Visual C++ or Visual FoxPro development environments, where developers created their own date-related code instead of using the year-2000 compliant date sets supplied by vendors.

Older versions of off-the-shelf spreadsheet, accounting and financial software are also high on the potential problem list, analysts said.

Tips for dealing with year 2000 issues

- Users who have bought software, such as an accounting package, should contact their vendor and get a statement of compliance with year 2000 issues.
- Spreadsheets need to be checked when calculating a length of time. If the date is dependent on the system date, it's better to express that in a four-digit field.
- Make sure older PCs don't have internal clock problems.
- Use a common approach to representing dates with respect to day, month and year.

For example, date-related fields can cause problems in spreadsheet macros that issue forecasts beyond 2000. Or if an insurance policy is due for renewal in 2001, an errant program might recognize the last two digits of that year as 1901 and throw the policy out.

Check operating systems

The year 2000 check shouldn't stop at the applications. Because applications depend on the operating system and its associated file system for handling dates, users should check to make sure operating system date functions are year 2000-compliant. According to Microsoft, all of its Windows platforms are year 2000-aware. IBM officials said OS/2 should be safe as well.

Even hardware is an issue. Tom Oleson, an analyst at International Data Corp. in Framingham, Mass., said internal clocks on aging PCs could cause problems.

Oleson said applications that use those clocks and then use sorts or searches related to creation dates could be incorrect. The only way to be sure is to check systems and file dates.

Of the vendors talking up the issue, some are advising users to upgrade to newer software. Still, others are giving out tools to help detect glitches. For its VisualAge customers, IBM has put together a set of tools to help ferret out potential problems in code related to the year 2000 problem.

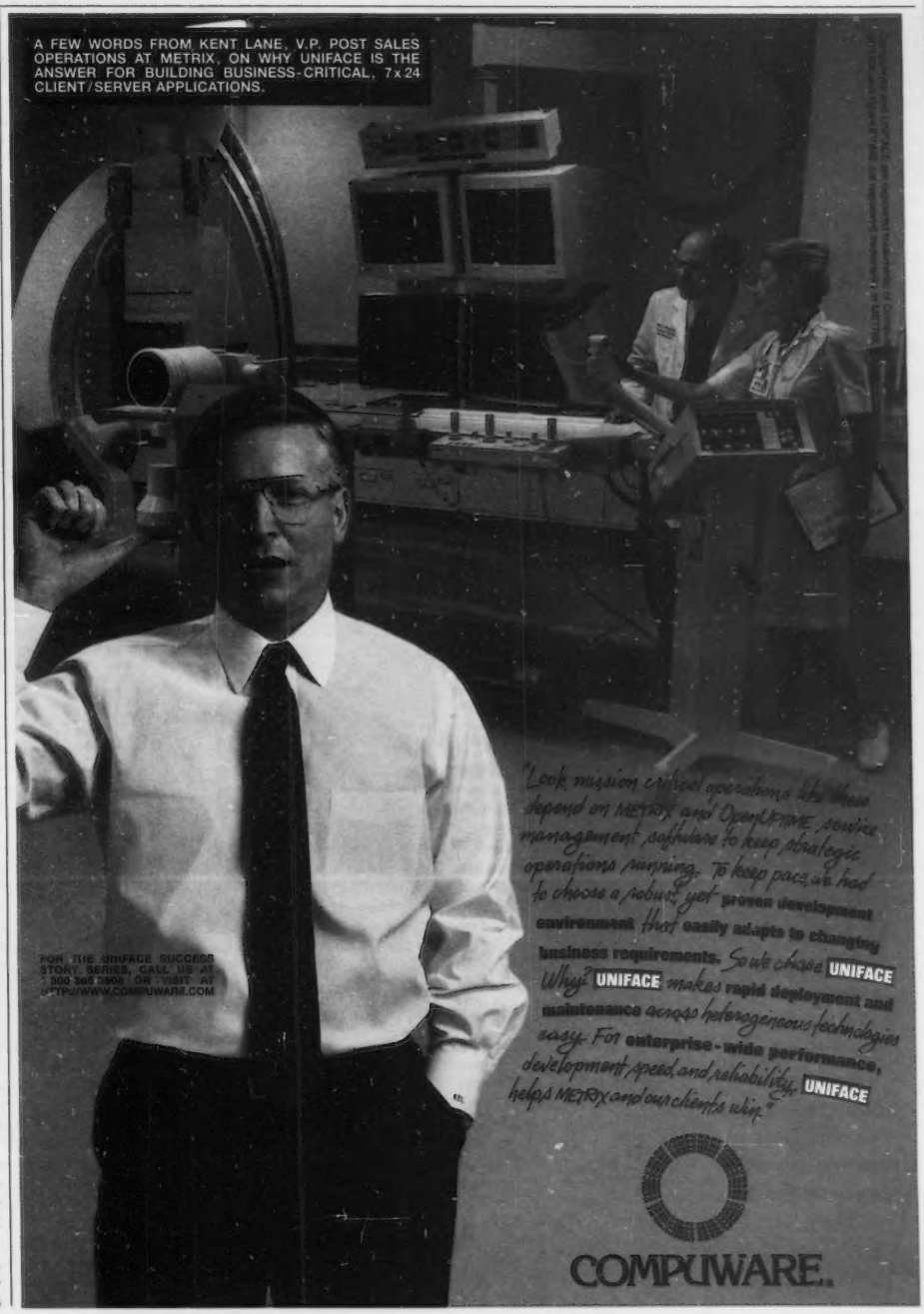
Users need to compare the cost of upgrading, based on the license and installation costs they may incur, against the cost of making existing software year 2000-compliant, which can mean rewriting macro programs and lines of code.

William Clerico, manager of Cobol services at QED, Inc. in New York, which provides corporate year 2000 support, said despite the warnings, many organizations are putting off dealing with the issue, both in the mainframe and desktop arena. Others, he said, have been proactive.

The city of Philadelphia is an example of a site facing mainframe- and desktop-related year 2000 issues, according to CIO John Carrow.

The city's personnel system, which runs in a desktop environment, was purchased years ago and customized to fit the city's needs. It now needs to be upgraded to meet year-2000 requirements, Carrow said.

To complete all the conversions necessary to keep the city running, an inventory was completed on a departmental basis, date standards were established and deadlines were set.



Pilot Software opens OLAP tools to Web

By Craig Stedman

Trying to keep up with the Joneses at Oracle Corp., Pilot Software, Inc. this week will announce plans to spiff up its decision-support tools with Internet access capabilities.

Each company is opening its online analytical processing (OLAP) tools to World Wide Web browsers, a step that users and analysts said should cut costs and make it easier to distribute and modify OLAP applications.

"The Web lowers your distribution costs to almost nothing," said Roger Theriault, a project leader at National Medical Care, Inc., a Waltham, Mass., operator of kidney dialysis centers. "If you have to modify an application, you just enhance it in one place, and it's done for everybody."

OLAP lets users conduct complex queries that analyze numerous facets of an issue, such as sales by region on a quarter-by-quarter basis.

A step behind Oracle

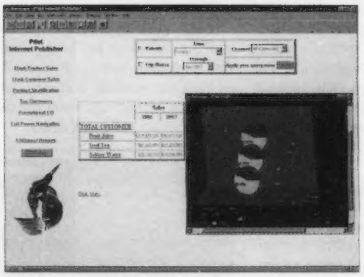
Such queries can be done with standard relational databases, but the process is much more complex than it is with OLAP tools and multidimensional databases.

National Medical Care plans to use Pilot's Internet Publisher software to let doctors at its 650 U.S. facilities analyze the company's central cache of patient data. The Web support makes it possible to transact OLAP on "very light" PCs, Theriault said.

Pilot's move to the Internet comes two weeks after Oracle took a similar step with its rival Express Server software [CW, July 29], but Oracle should beat Pilot to market with Web support by several months.

Oracle's Internet-enabled Express Server 6.0 is due to ship next month for Microsoft Corp.'s Windows NT.

Pilot is targeting a year-end delivery for its NT-based Internet Publisher, which will be an add-on to the Cambridge, Mass., company's Pilot Decision Support Suite. Unix versions of Internet Publisher should follow by the first quarter next year, Pilot said. Oracle has promised to ship its Web-enabled Express Server 6.0 for Unix systems in December.



Pilot's Internet Publisher *includes prebuilt Java applets and ActiveX controls for use in developing charts and other visuals*

But Pilot is including a so-called "personal cube" feature that lets mobile users download pieces of an application and do analysis against the data while disconnected from the network.

Oracle doesn't have that capability in Express Server 6.0, said Rich Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. On the downside, users need Pilot's $695 client software to take advantage of the personal cube technology. Pricing for Internet Publisher starts at $10,000 per server as an add-on.

America Online unplugged

CONTINUED FROM COVER 1

fulfill its promise to reimburse each of its customers for one day's lost service.

Some IS managers expressed fears about the future of electronic commerce, others were quick to defend the technology.

"It's an isolated incident. We're not terribly concerned," said Tim Kemp, manager of online services at First Chicago NBD Corp., which has sites on the World Wide Web and AOL. The outage won't damage the cause of electronic commerce — as long as future outages don't become common, he said.

David Glickman, manager of interactive media at Miramax Film Corp. in New York, agreed. Miramax runs online forums and chat sessions on AOL to promote its films. The company also maintains sites on the Web.

"Everything is linked. We've all experienced delays and mishaps due to some computer glitch, to our credit cards or bank card or the phone company," Glickman said.

"... I can, however, commit that we will do everything we possibly can to improve quality and that when we do encounter problems, we will be candid about them."

— Steve Case, chairman and CEO of America Online

Maintenance mishap

Vienna, Va.-based America Online said its system crashed after it was being taken down at 4 a.m. for routine maintenance. During that time, the company's ANS subsidiary, which runs most of the AOL network, tried to update the company's routing tables. This led to the system crash (see related story, this page).

After teasing users for hours with messages to try again later, the system came back up at 10:45 p.m.

AOL Chairman and CEO Steve Case apologized to subscribers in a letter distributed after service was restored. He said future outages will continue as AOL experiments with the new medium of online interaction. "I can, however, commit that we will do everything we possibly can to improve quality [and that] when we do encounter problems, we will be candid about them."

Besides serving America Online's networking needs, ANS offers Internet connectivity for business users. Ironically, ANS several weeks ago started to offer limited performance commitments for its Internet connectivity service. The commitments were praised by industry observers as a good first step but were criticized for being far too incomplete, with too many disclaimers in the fine print [CW, Aug. 5].

Although America Online is mainly a consumer service, some businesses were affected by the outage. About 15% of the electronic mail sent via AOL is business-to-business, said Greg Cline, an analyst at Business Research Group in Newton, Mass.

America Online estimates it processes six million pieces of E-mail daily.

The outage left management consultants at The Devon Group in Holmdel, N.J., scrambling to find an alternative E-mail route. Managing partner Jeanne Achille was fighting mad.

"It's difficult to consider AOL a business tool when it's out for an entire business day without any reasonable expectation as to when the system is brought back up," she said. For most of the day, AOL's warning screen said the system [will be] back up in just an hour or so — when in fact the failure stretched for many hours. But The Devon Group also gets E-mail connectivity from Maestro Technologies, Inc., an Internet service provider in New York.

AOL is often used as a backup E-mail system for employees who work from home for large corporations that have no other facility for dial-in connectivity. But users who rely on America Online — or any online service or 'net service provider — should have a backup service in place, Cline said.

The root of the problem

America Online's network-wide outage last week underscores the severe and continuing problems faced by online and Internet service providers that rely on routers as the base of their networks.

Human error with routing tables felled AOL. That combination also was behind NetCom Online Communication, Inc.'s crippling network outage last month.

Routing tables list all network addresses and can be easily corrupted.

Router problems also caused a huge Internet brownout a year ago this month, when a Japanese firm mistakenly broadcast a message to all routers on the Internet.

Analysts say online service providers and Internet providers should upgrade their router-based networks to more scalable, but more expensive switch-based networks [CW, Aug. 5].

AOL already has Asynchronous Transfer Mode (ATM) switches in its wide-area backbone network.

Part of the cause for the outage was attributed to problems installing LAN switches in the online service provider's data centers.

Speed of the essence

Routers direct traffic from point to point, usually at fairly slow speeds, and they need to be quickly upgraded with memory and bigger buffers to handle increasing traffic volumes. But switching technology operates at high speeds and can handle more traffic.

"Switching is the answer to most of these problems, but the [Internet providers] have stuck with routers, largely because they're cheaper," said John Morency, a principal at The Registry, Inc., a consulting and research firm in Newton, Mass.

Routers can cost as little as a few thousand dollars each; switches typically cost at least $10,000 to $15,000 each.

AOL didn't attribute any of the problems to its ATM switches. But another problem pointed out by users, analysts and even router market leader Cisco Systems, Inc. — whose routers are in the AOL network — is the sheer lack of engineering talent at Internet providers.

"If they can't handle simple routers, how are they going to take on switching?" asked one industry source, who requested anonymity.

Online and Internet service providers are often cash-strapped and can't afford sorely needed engineers and technicians, let alone equipment needed to upgrade their overtaxed networks. — *Bob Wallace*

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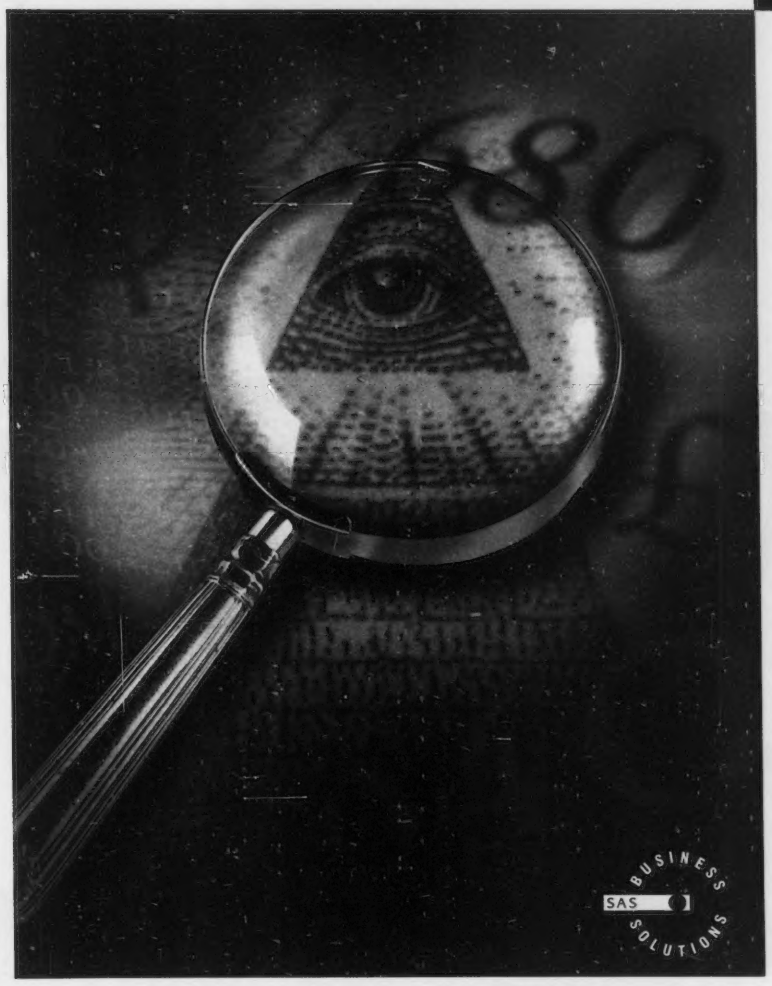

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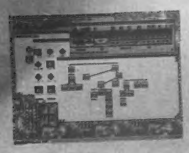

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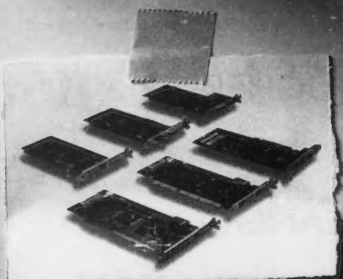

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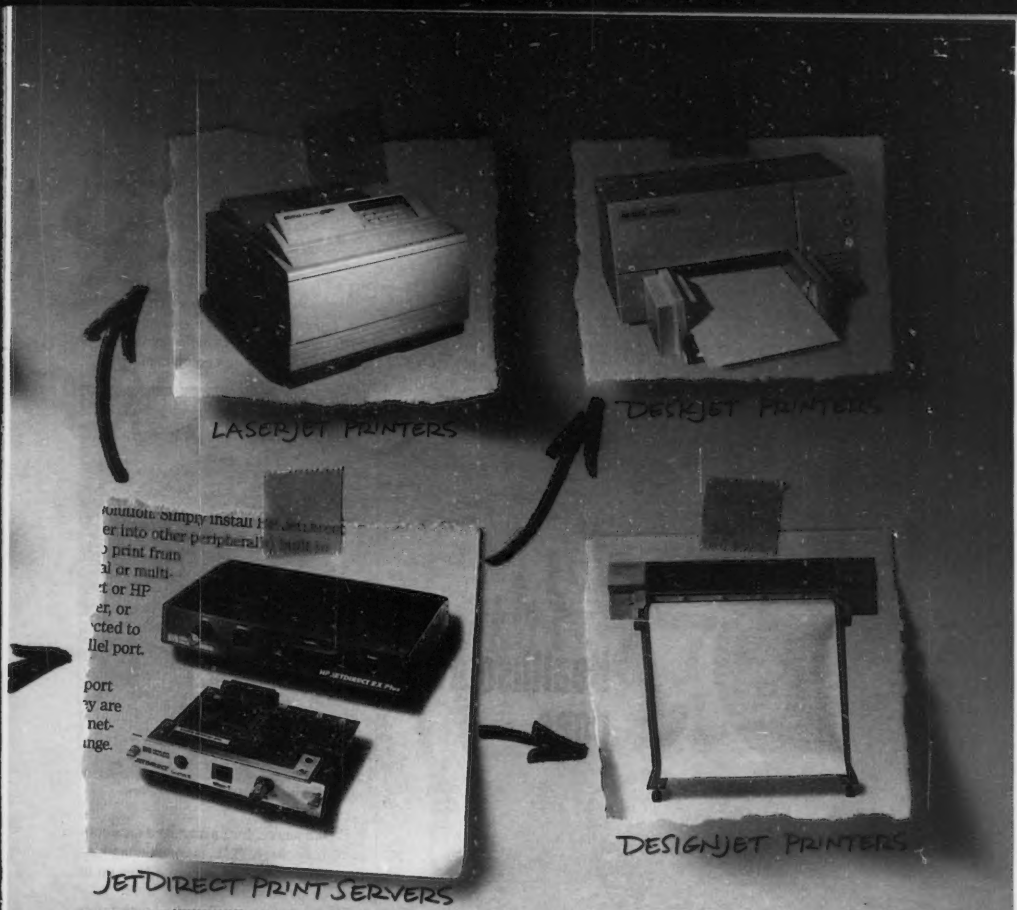

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Bay takes dip in frame-relay market

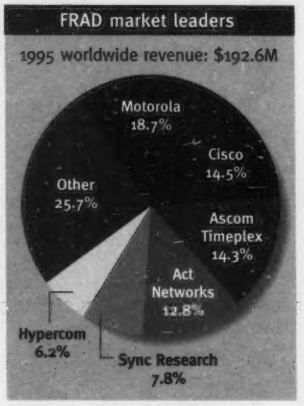
By Kim Girard

Bay Networks, Inc. is entering the competitive but lucrative frame-relay access device (FRAD) market, hoping to make a splash with companies that move mainframe SNA traffic to frame relay.

Billerica, Mass.-based Bay last week introduced the low-end FRAD 630, which enables remote office users to send data in a frame-relay format at speeds that range from 56K bit/sec. to 1.544M bit/sec., or T1.

Although routers account for 80% of devices used at public-access frame-relay networks, FRADs are gaining ground with users who integrate LAN and legacy traffic, analysts said. FRADs provide "a viable and cost-effective solution," said Curtis Price, an analyst at International Data Corp. (IDC) in Framingham, Mass.

Bay is also targeting long-distance carriers by extending Synchronous Data Link Control (SDLC) capabilities for backbone node routers. SDLC is a protocol for sending SNA traffic over a wide-area network. When the long-distance carrier provides this capability, customers who need SDLC traffic converted to frame relay can avoid costly upgrades or new equipment.



Source: International Data Corp., Framingham, Mass.

Healthsource, Inc., a managed care company in Hooksett, N.H., is considering both Bay products to help integrate sites on its frame-relay network.

The company — a Bay shop with frame relay provided by MCI Communications Corp. and Sprint Corp. — has 40 sites and frequently adds more locations after acquisitions.

Costs less

Some of the new sites are IBM shops in which using a $1,400 FRAD would be a lot cheaper than investing in a $2,500 to $4,000 Bay Access Node, said Ed Braley, manager of Healthsource's corporate data networks.

"What we could do with this new product [FRAD 630] is bring our applications to offices that were previously mainframe and do it at a lower cost than we could previously," Braley said.

SNA share

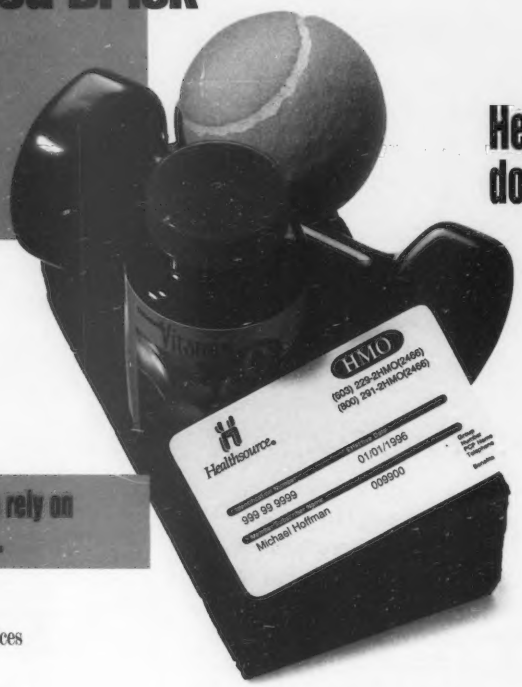
SNA represents about 20% of all frame-relay traffic, according to IDC.

By moving into the FRAD market, Bay joins several internetworking companies, including Cisco Systems, Inc. and, on a smaller scale, IBM. Key FRAD competitors include Fastcomm Communications Corp., Sync Research and Motorola, Inc.'s information systems group.

FRAD 630 supports IP/IPX routing. It will be available this month, priced at $1,395.

The announcements came in a tough period for Bay. In recent weeks, CEO Andy Ludwick announced plans to leave the company, earnings were disappointing and the sales force was restructured.

Rely on Red Brick



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Lotus upgrade to tie Notes to NT

By Tim Ouellette

Lotus Development Corp. hopes to make managing Notes networks as easy as 1-2-3.

The September release of Notes 4.5 will include tight integration with the Microsoft Corp. Windows NT platform (see chart) and will offer directory synchronization between the Notes Name and Address Book and Novell, Inc.'s Novell Directory Services for NetWare.

In addition, a Notes 4.11 maintenance release will offer Simple Network Management Protocol (SNMP) monitoring agents in the Notes server. That will let users monitor Notes performance from any SNMP monitoring tool.

As larger organizations consider expanding their Notes networks beyond the workgroup level, Lotus must offer those improvements to remain an enterprise option, said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass.

The Notes/Windows NT integration — the most extensive of the planned improvements — will reduce the extra administrative hassles and duplication of effort previously required to maintain the two environments. Features include single sign-on access and directory synchronization between Notes and NT, along with a single events log for Notes and NT.

Lotus makes Notes easier to manage in Windows NT environments by supporting the following:

- **Single sign-on:** One ID and password to access both environments
- **Directory synchronization:** Changes to user accounts get updated in the other environment automatically
- **Windows NT event logging:** Ability to log Notes events in the Windows NT logging facility to provide one place to monitor both networks
- **System Management Server:** Lets Notes administrators distribute software and updates over the network without user interaction

Users said they welcomed the tighter NT integration.

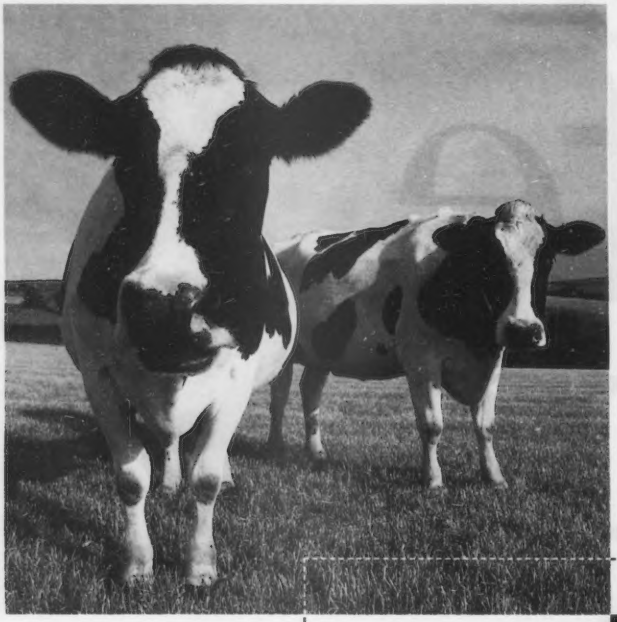
NAC Reinsurance Corp. in Greenwich, Conn., plans to move Notes from an IBM OS/2 server to a Windows NT-based network, largely because of Lotus' efforts to support NT.

Not all types

Although Lotus prides itself on running on most platforms, the firm dumped SCO, Inc. Unix earlier this year and doesn't offer a Macintosh server version of the product.

Notes got its start in the OS/2 and Unix worlds, but users recently have been clamoring for the ability to run Notes on the Windows NT Server platform. The moves are also aimed directly at archrival Microsoft, which touts the integration of its Exchange Server with Windows NT and the BackOffice server application suite as major selling points.

Still, NT isn't the only game in town. Lotus officials said they plan even tighter bonds between Notes and NetWare and intend to provide native Notes support on platforms such as IBM's AS/400 midrange systems and System/390 mainframes.



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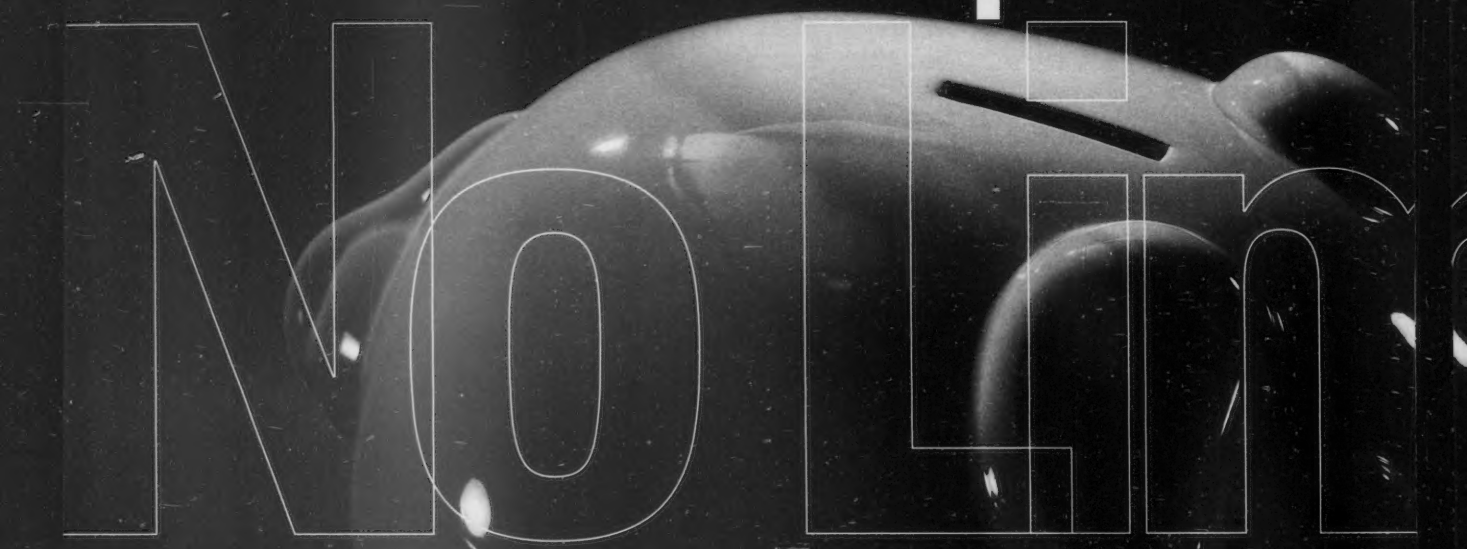

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Interactive 3-D bows on the 'net

Olivr tools offer streaming technology

By Stewart Deck

In the ongoing effort to dress up the World Wide Web, Olivr Corp. has unveiled the latest fashion line. The Lexington, Mass.-based company recently announced tools to spruce up Web pages with streaming, three-dimensional, photo-realistic images.

Outfitted with Olivr's free viewer, which is available at www.Olivr.com, visitors will see an interactive 3-D image or panorama composed of a tightly stitched-together sequence of digital photographs. By pointing and clicking, users can view images from any angle, rotate them and zoom in and out.

Insight, a mail-order catalog retailer and direct marketer of hardware and software products, will soon add Olivr images to its online product catalog at www.insight.com. "We want to give our customers a way to kick the tires on our products and make their visit a fun experience," said John-Scott Dixon, manager of electronic media at the Tempe, Ariz.-based company.

Dixon said Insight had sales of more than $1 million in June through its Web page and is looking to Olivr's streaming technology to continue pumping up sales.

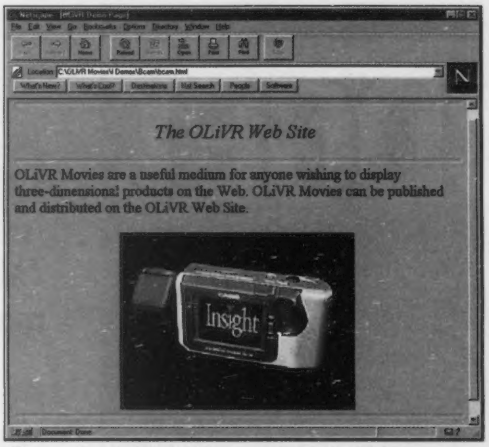
Streaming technology

Visitors to Insight's page will soon be able to compare computer systems by zooming in on the controls, checking out the number of ports and opening up panels to look inside.

Quick response

The advantage of streaming technology is that it begins to display low-resolution photographic images immediately, giving visitors something to view and play with while finer background details fill in.

"This technology has excellent implications for Web advertisers. It gives them a way to provide striking content to visitors with low-speed connections," said John Robb, an analyst at Forrester Research, Inc. in Cambridge, Mass.



Olivr's products *let Web site visitors see an interactive 3-D image or panorama composed of a tightly stitched-together sequence of photographs*

David Siegel, president of Studio Verso, a design firm in San Francisco, said Olivr's tools will help him add more complex images to Web pages. "We'll be able to use extremely detailed photos that users can get fairly easily in one [streamed] file."

Aside from the streaming delivery, the viewing experience will probably be similar to Apple Computer, Inc.'s QuickTime VR, said Ross Rubin, senior analyst at Jupiter Communications, Inc. in New York. "QuickTime VR also lets you control, rotate and navigate around realistic 3-D objects," Rubin said, but Olivr "provides content developers more flexibility in presenting data."

Even more functions

Some of that flexibility comes from the Olivr Server, which adds enhanced functions such as interaction with Java applets and object-oriented databases. It also provides the back-end technology to track and analyze viewer behavior.

For the Insight Web catalog, this flexibility will allow Dixon to combine photo images with marketing information and, with the Olivr Server, to add Sun Microsystems, Inc. Java applets and navigation through object-oriented databases.

The Olivr Production Toolkit for creating interactive 3-D images costs $495. The Olivr Server starts at $2,500.

Web snares document management software

By April Jacobs

Analysts predict that by 2000, all document management systems will be Web-enabled, which will offer users lower costs and ease of use.

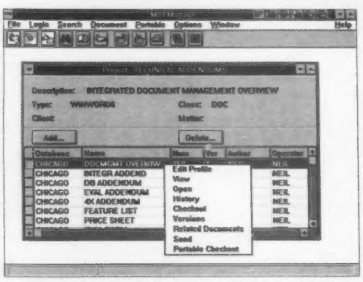
Already, three vendors — NetRight Technologies, Inc., Wang Laboratories, Inc. and Information Dimensions, Inc. — have announced plans to offer World Wide Web-enabled document management software in the next several months. The software will let users access systems over the Internet.

Some products will let users access documents only; others will allow for bidirectional access, in which users can create and alter documents over the Internet.

Joe Mislinski, general manager of the advanced technology group at UARCO, Inc., a systems integrator in Barrington, Ill., is previewing NetRight's Imanage Internet product, which offers bidirectional access.

He said the product's check-in and check-out capability, which lets users access and create documents over the Web, is something users want and need. "Checking in and checking out a new version of a document is a requirement everybody has because users want to be able to access the latest version of a document," Mislinski said.

But in some cases, users are choosing a system that limits what they can do because some of those users are the general public.



NetRight's Imanage *offers users bidirectional access — the ability to create and alter documents over the 'net*

Laura Crabtree, manager of information systems and technology at the Pittsburgh Research Center — part of the Department of Energy and the National Institute of Safety and Health — said her group uses one-way access to provide the public with research from the now-defunct U.S. Bureau of Mines without compromising security.

The company uses Information Dimensions' Basis, which lets users access a SQL server and database with records that date back to 1970. Some of the data is in bibliographic format, while other research and information offers full-text versions, Crabtree said.

Web-based software also can potentially lower costs for organizations, says Linda Myers-Tierney, an industry analyst and consultant at International Data Corp. (IDC) in Framingham, Mass.

Growth arena

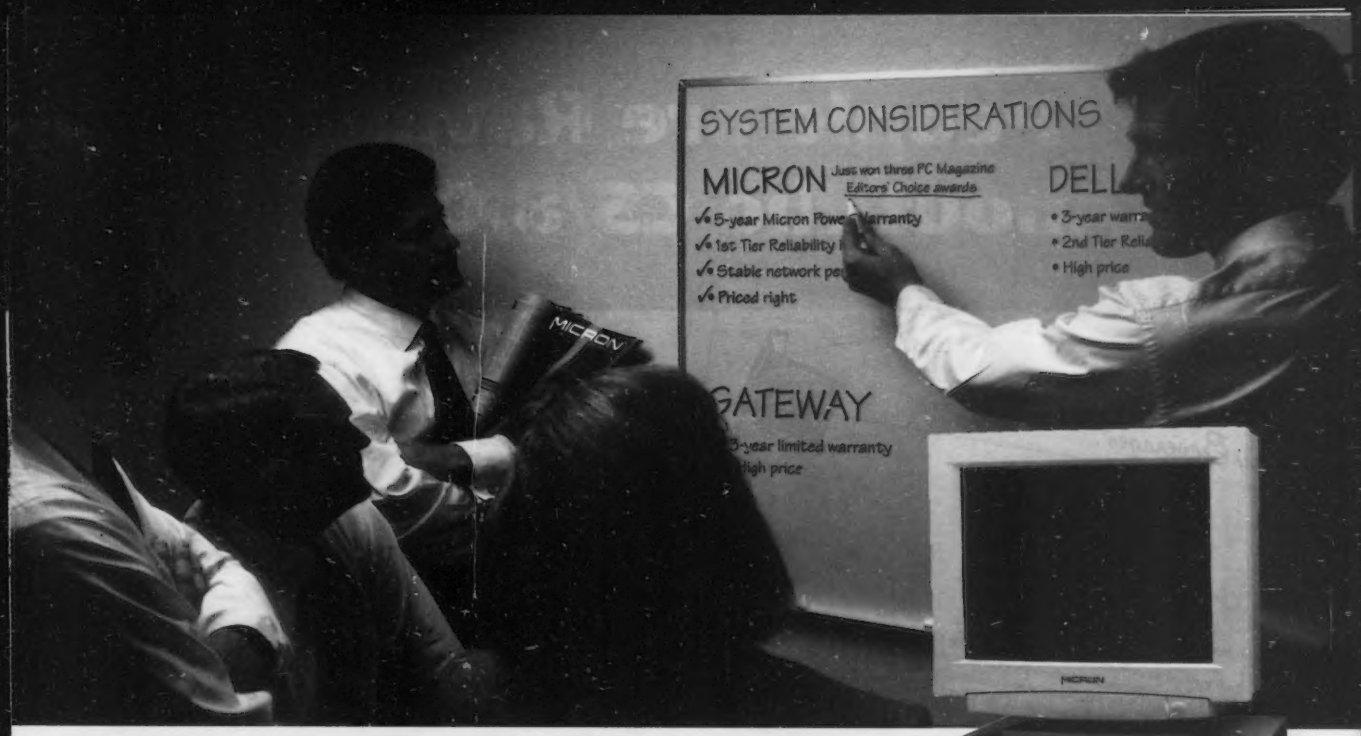
Linda Myers-Tierney, an analyst and consultant at IDC, said the compound annual growth rate for networked document management is 34%. In 1995, the market was $334 million. It is expected to reach $1.43 billion by 2000.

Vendors may offer server-based pricing. In that scenario, companies give users access to the system on an as-needed basis. Server-based pricing can be more economical than seat-based arrangements, which can cost up to several hundred dollars per seat, Myers-Tierney said.

And because software doesn't need to be installed on multiple desktops, initial installation, maintenance and upgrade costs are also lower, Myers-Tierney said.

Myers-Tierney said the technical advantages of having Web-based, bidirectional access also will extend the reach of document management.

"This will break down the barriers in processes or within organizations today that are constrained by legacy systems," she said. By 2000, the whole document management market will have Internet underpinnings, she said.



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To
Marc Myers
President, Client/Server Connection
103 S. Bedford Road,
Suite, 202,
Mt. Kisco, NY 10549

Dear Marc

I want to personally thank you for the excellent support services that you have provided since we purchased your CS/8000 product. Both your services and the software itself have surpassed my expectations. While I knew that CS/8000 would help with our project documentation, I was pleasantly surprised by the broad based coverage and continuing enhancement of your product.

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Furthermore, I really appreciate the fact that your attention to our account has been tremendous. We are glad to be doing business with you and look forward to future versions of your software.

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June 6, 1996

Marc Myers
Client/Server Connection, Ltd.
103 South Bedford Rd., Suite 202
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Dear Marc:

The National Park Service (NPS) is the caretaker of the American's heritage. Whether it is our nation's White House, a back-country section of the John Muir trails, the historic mission at Tumacacori National Historic Site, or a "wetlands" control facility set up to protect an endangered species at Everglades National Park, each is planned and cared for with the same professionalism by the Park Service facilities specialist.

In addition to our National heritage resource responsibilities, Park Service is accountable for other resources. The 8,000 miles of roads, 1,400 bridges & tunnels, the 350 dams & water impoundments, the 5,000 employee housing units, the 1,500 water/sewer systems, the 300 fueling facilities, 2,000 storage tanks that support Park operations are the responsibilities of the Service's facility management professionals. All of this supports a safe enhanced experience for 270 million visitors per year.

Recently, the Service initiated a very complex study to identify its facilities management informations requirements. This study will analyze the Program's information issues, needs and alternatives in an effort to determine how to better support the NPS Facilities Management Program. This study will evaluate and recommend an information architecture that will effect the preservation and care of our most cherished National resources.

In support of this project, the Park Service has decided that Client/Server Connection's CS/10,000 expert-based software is the best engineering tool to assist in the analysis of its complex information architecture. Not only will CS/10,000 facilitate the analysis activities, it provides exceptional tools for documentation and project management. The Park Service's success with the Facilities Management Information Study will depend greatly on Client/Server Connections's CS/10,000 software.

Sincerely,

Will Brimberry

Will Brimberry, Project Manager
Facilities Management Program Information Study
National Park Service

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March 26, 1996

Ms. Heather Zeigler
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Computer Industry

CEO reenters Stratus-fear

After weak second quarter, Bill Foster resumes control of fault-tolerant systems vendor

By Craig Stedman

Back to the drawing board.

Just six months after he handed off the CEO job at Stratus Computer, Inc. to a hand-picked successor, company founder Bill Foster took it back last week.

Bill Foster *is back after six months as chairman*

Foster, who had been chairman of Stratus since January, resumed full operating control of the struggling fault-tolerant systems vendor.

Gary Haroian, a 13-year Stratus veteran who had been Foster's longtime second-in-command, resigned as president and CEO.

The management change follows a surprisingly weak second quarter by Marlboro, Mass.-based Stratus. The company reported flat sales and profits that were half of what Wall Street expected. Its stock price plummeted more than 25% in late July, from $24.25 to less than $18. The stock price remained stuck around the $19 mark last week.

Ups and downs

The new travails follow several years of highs and lows at Stratus. The company has been trying to branch out into new software markets to make up for slackening hardware demand, but users and analysts said that effort hasn't paid off yet. "It's been a go-nowhere company in the last 18 months," said David Wu, an analyst at Chicago Corp. in New York.

"Their software ventures aren't quite as spectacular as their hardware achievements were," said Danny Gumport, senior vice president and director of distributed systems management at PaineWebber, Inc. in New York. PaineWebber uses a pair of Stratus systems to route trade orders to stock exchanges and is considering an upgrade to newer models.

Gary Haroian, *Stratus veteran steps down*

The problems at Stratus could raise some eyebrows about the wisdom of going ahead with the upgrade, Gumport said. "I try not to base technology decisions on business success, and I'm still a solid Stratus supporter," he said. "But the people who actually approve all of the money to be spent like the warm fuzzies from good financial results."

In fact, Foster visited PaineWebber two weeks ago in an apparent attempt to reassure the company, Gumport said. Gumport was relatively sanguine about the management change. "They had terrible financials, and I guess somebody had to take the blame," he said. "Foster was and is Stratus. It's his company, maybe he can do something with it."

Something certainly needs to be done, said Jim Johnson, an analyst at The Standish Group International, Inc. in Dennis, Mass.

"In a lot of ways, the world has passed Stratus by," Johnson said. "They have good technology, but they can't seem to bring it to market at a competitive price."

Foster couldn't be reached for comment about the management change or his plans for revitalizing Stratus.

Frame relay might not pay

By Kim Girard and Bob Wallace

Underpricing of explosively popular frame-relay services has left big carriers scrambling to make up lost profits by offering add-ons to the services.

Analysts who have tracked frame-relay service since it became available in March 1991, concur that many carriers have brought problems on themselves that are forcing them to sell the service below cost.

"They're really not [making money]," said Tom L. Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "They haven't gotten their arms around how to market frame."

No dice

But users aren't buying the carriers' pitch to make up revenue by selling them network diagnostic and management services.

"If they think they're going to make up for lost revenues with add-ons, they're in for a world of hurt," said Jim Fey, director of strategic technology at PMI Mortgage Insurance Co. in San Francisco. "Frame relay is so reliable and stable that it's like breathing. You don't notice any problems unless it stops."

"We wouldn't be interested in buying extras beyond the frame-relay pipes, since we already have a talented service and support staff for our internal users and our customers," said Phil Evans, senior telecommunications consultant at Perot Systems Corp., a Dallas-based outsourcer and longtime frame-relay user.

> *"If they think they're going to make up for lost revenues with add-ons, they're in for a world of hurt. Frame relay is so reliable and stable that it's like breathing. You don't notice any problems unless it stops."*
>
> — Jim Fey,
> PMI Mortgage Insurance Co.

Carriers also have fumbled by pricing frame relay 30% to 40% less than private lines, a move that fueled the user exodus from lower-speed and less-reliable dedicated links.

Carriers also have seriously underestimated user demand for frame relay, which drove them to spend millions upgrading their networks to handle the unexpected surge in data traffic.

Between January 1994 and January 1996, the number of frame-relay users in the U.S. jumped from 1,190 to 12,697.

Many carriers aren't profiting from frame relay yet because they are in high-growth mode and struggling to keep up by investing in their networks, said Beth Gage, a broadband analyst at TeleChoice, Inc. in Verona, N.J. It will take several years for some to see profits, she said.

Though analysts cited sky-high switch prices as an item that has eaten up service revenue, Evans said he sees a brighter future for the carriers in a more competitive market.

But don't expect carriers to dramatically raise prices once customer bases stabilize, said Rosemary Cochran, principal at Vertical Systems Group, a consultancy in Dedham, Mass.

"I don't think that's going to happen for the next several years because there is a competitive market," she said.

Briefs

BBN Corp. suffers $57M loss

Internet service provider and major Internet backbone supplier **BBN Corp.** took a $56.6 million loss the fiscal year ended June 30, compared with profits of $64.8 million last year. The loss is in line with analysts' predictions that the ISP market is struggling and due for a shakeout. BBN's revenue for fiscal 1996, however, was $234.3 million, a 33% rise from fiscal 1995's $175.6 million.

Interlink to go public

Interlink Computer Sciences, Inc. filed with the Securities and Exchange Commission for an initial public offering of 2.7 million shares of common stock at $13 to $15 per share.

HP buys Trellis Software

Hewlett-Packard Co. signed an agreement to acquire **Trellis Software and Controls, Inc.**, a motion-control software company in Rochester Hills, Mich. Financial terms of the deal weren't disclosed. With the acquisition, HP aims to broaden its expertise in the field of precision motion control systems for the automotive, electronics and aerospace industries. Trellis develops motion control software for those industries.

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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
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DEPARTMENTAL MANAGEMENT
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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No

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F. 100 – 499	☐	☐
G. 50 – 99	☐	☐
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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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31. Programming Management, Software Developers
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60. Sys. Integrators/VARs/Consulting Mgt.
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B. 10,000 –19,999	☐	☐
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E. 500 – 999	☐	☐
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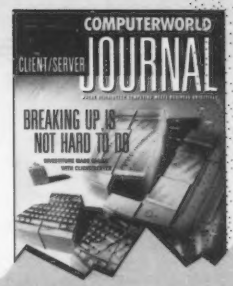

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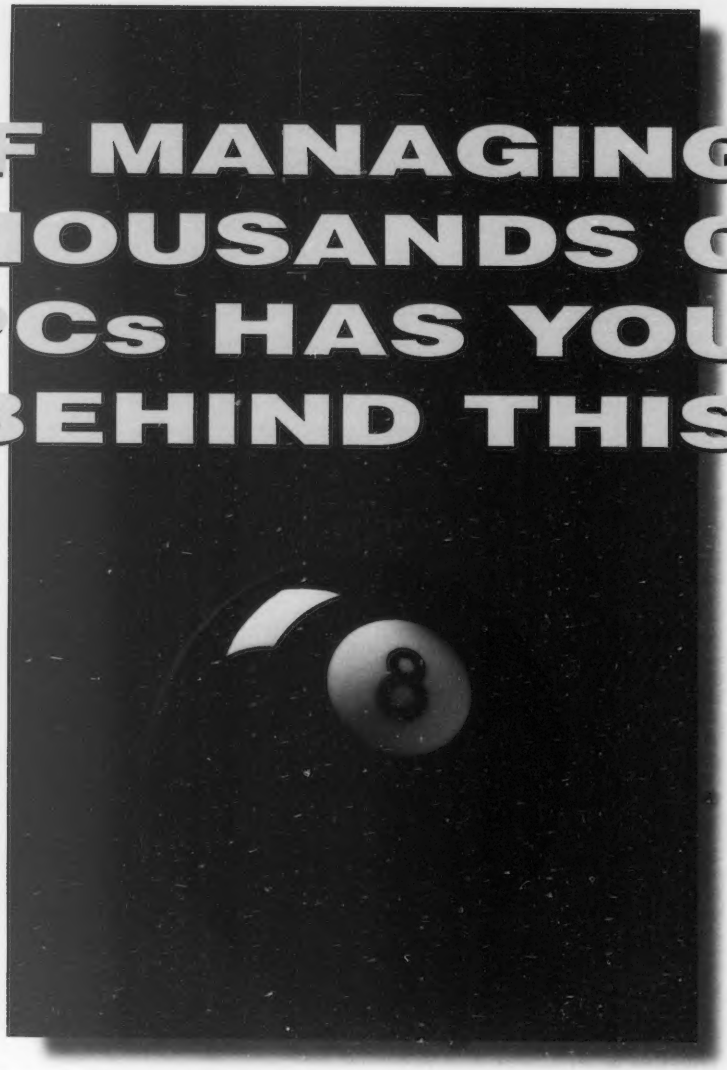

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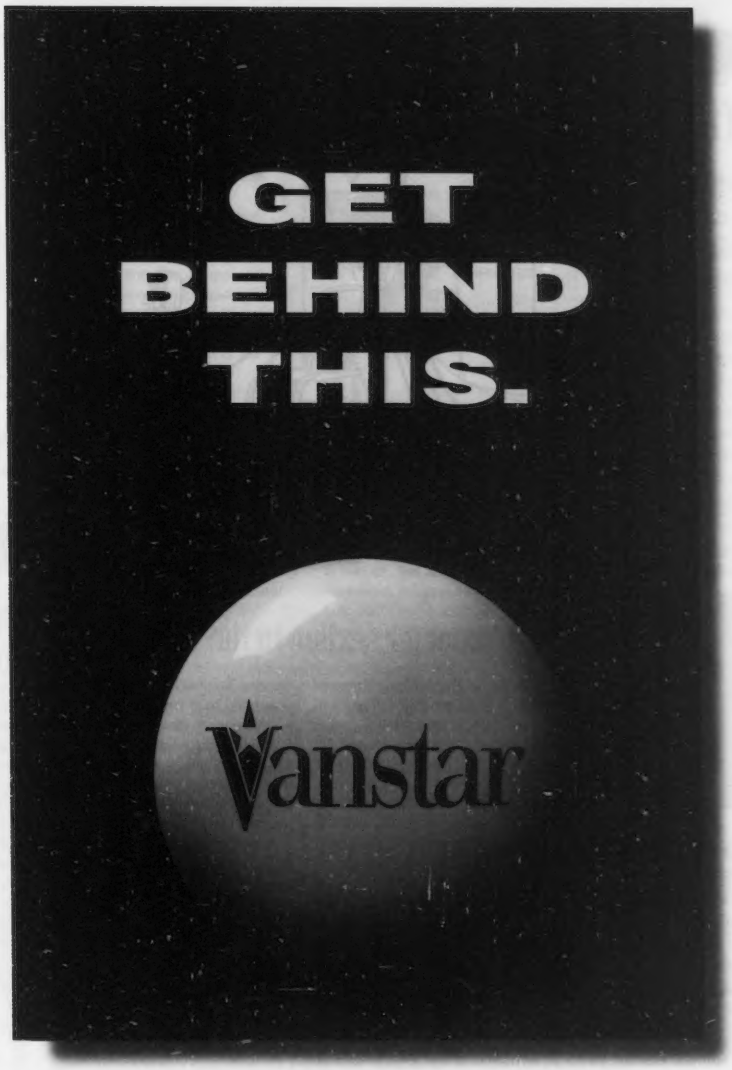

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Editorial

America Off-line

If you're an America Online customer who was up against a critical deadline to submit a proposal via E-mail last Wednesday, you probably didn't make it.

If you're a writer who had set aside a day to revise an article that was coming to you electronically, you bided your time. If you're a home-based worker who gets the 20 or 30 pieces of E-mail that's typical for a busy professional, you spent the day in a vacuum.

The reason, of course, is that America Online became America Off-line for 19 hours last Wednesday, the victim of a software glitch that shut down the national network. For all the frustration and inconvenience experienced by its customers last week, AOL offered reparations of a day's worth of service, which is worth about 90 cents. Like it or not, AOL did the right thing.

Customers who rely on a single E-mail provider to run their businesses got what they asked for last Wednesday. Experience has proven that even the biggest network services are prone to occasional failures. Netcom, Inc.'s entire network blew out for 15 hours a few months ago, and AOL has had spot E-mail failures in the past. Most local Internet service providers are subject to occasional interruptions of up to several hours. Heck, AT&T's entire national network more or less died for a day in 1990.

An online service isn't perfect, and it can't be responsible for lost time or business. Disk manufacturers, after all, will reimburse you the price of only one disk if their product fails, even if it held the only copy of the novel you've been working on for six months. Anyone who depends on a computer for his livelihood knows you have to back up things. Network service users should do the same.

This isn't news to IS management, but how about to the legions of freelancers, contractors and home-based workers to whom corporate America is increasingly outsourcing its work? For many, AOL is a an electronic lifeline to their employers.

If you're a consultant working at home, pay the extra $15 a month for the peace of mind that a second service provider brings. If you're an IS manager, make sure the contractors you employ read the preceding sentence. Chances are, the time lost last Wednesday is worth a whole lot more to you than 90 cents.

Paul Gillin, *editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin

Letters to the editor

No room for sexism in the workplace

I'd like to thank *Computerworld* and Barry Demchak ["Sexism in the IS workplace takes many forms," Letters to the editor, CW, July 15] for providing the best laugh I've had in a long time. Demchak's feminist views are equivalent to my father-in-law's: Whatever a woman does is fine as long as his supper's on the table when he gets home.

Demchak's "economic realities" are a subtle form of sexism. He is making assumptions that are not necessarily true. Two and a half years ago, another manager I know (a man) felt the same as Demchak. He employed three consultants: two married men with children and a single woman with no children. This manager decided to hire the two men permanently because he felt they would be more stable employees. Both men quit within six months, and the woman is still employed there as a consultant. Is paying this woman less an adequate reward for her loyalty?

Also, Demchak is ignoring the changing reality of our profession.

Working remotely from home is a viable option for both men and women with children. If Demchak were truly concerned with his return on investment, he would look at *all* alternatives to make *all* of his employees as productive as possible.

Suzan Harden
Findlay, Ohio

Readers differ on coverage of gays

Reading the "Letters to the editor" in the July 22 edition regarding the coverage of "diversity" in the June supplement inspired me to write a letter of encouragement.

Two readers bemoaned the noninclusion of gays and lesbians as a minority group. You also left out smokers and alcoholics — and rightfully so. Personal desires and behaviors (sexual or otherwise) have nothing to do with diversity in the workplace.

Doug McLeod
Starkville, Miss.

Thanks for your coverage of gays and lesbians in the computer industry. I know you get nasty letters from folks who don't agree with your publishing articles that include gay men and lesbian women in them. These folks like to pretend that we are not relevant subjects of articles about the computer industry.

But the reality is we do exist. And therefore, articles about the computer industry would not be accurate or complete if they did not contain references to gays and their sizable presence in this and related industries.

Scott Abel
Indianapolis

OpenDoc, OLE not as equal as portrayed

In the July 29 issue of *Computerworld*, there is an article titled "IBM ships first batch of OpenDoc components" by Sharon Gaudin in which I was quoted. There were many items brought up during my conversation with Gaudin. Included in this discussion was the lack of OpenDoc parts, which is not a problem for Microsoft Corp.'s OLE. This fact is true and not disputed. However, the article does not show the whole story. It seems to indicate that OLE and OpenDoc are equal competitors and that OLE is winning.

The two technologies are not equal. OpenDoc is a pure object solution that supports encapsulation, polymorphism and inheritance. OLE does not support inheritance and therefore does not fit in the same category. For companies building upon a pure object architecture, such as Common Object Request Broker Architecture, the OpenDoc technology is far superior to that of OLE. OLE is great for companies looking at sharing Microsoft applications, but that is where the technology ends. Users who have looked at both technologies will tell you OLE is not suited for an object architecture solution.

Karen D. Boucher
Market analyst
The Standish Group International, Inc.
Dennis, Mass.

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

FROM A COMPUTERWORLD SINGAPORE INTERVIEW WITH GORDON E. EUBANKS JR., PRESIDENT AND CEO OF SYMANTEC CORP., IN WHICH EUBANKS IS SKEPTICAL ABOUT NETWORK COMPUTERS:

First of all, there isn't a great price savings. What it takes to make a network computer and what it takes to make a personal computer isn't much different. Network computers ... are really $800 machines, and personal computers are really $1,200. So, there isn't much difference.

So, I think the benefit is really exaggerated. You can't eliminate the screen. You can't eliminate the keyboard. You can't eliminate a lot of stuff. The processor has to be in there. Most of the power of the processor is actually used in display, not in actually calculating numbers.

Second, the bandwidth isn't available to support the premise of a network computer [always linked to the network to download programs]. It may be in the future, but it isn't there today. People take computers [on] airplanes. People take computers into their homes. People take computers on business trips. The bandwidth isn't there to be dependent on the network to provide applications.

The idea of applications being little components is also a little naive. Almost all applications today are made up of modules that are integrated together. The difficulty in getting components to be reliable is getting those components to work together seamlessly.

Maybe, over time, some of these hurdles will be eliminated, but I am skeptical that [Microsoft's] Office will be replaced by 58 Java applets written by 58 different people. I think it is a stretch.

If there is a place where the network computer might make sense, it is in corporations that want to go back to the 3270 terminal on the desktop. That was the network computer. We went from the network computer to the PC because of the [latter's] incredible flexibility.

Why intranets are a missed opportunity

David Moschella

Inward-looking intranets lack the payoff of external, customer-focused Internet applications.

Why can't I get excited about intranets?

It's now widely believed that the next few years will be dominated by the development of intranets, as opposed to public Internet applications. Netscape, Sun Microsystems and others have stated repeatedly that they will make the bulk of their money over the next few years from intranets.

They're probably right. Although only 14% of large and medium-size U.S. organizations have some sort of intranet, 33% expect to have one within 12 months.

Despite this apparent stampede, the industry's emphasis on intranets can be described only as disappointing.

Since the beginning of enterprise computing, information technology suppliers have sold their wares based on promises of internal productivity. Accounting, human resources, payroll, manufacturing and word processing systems were designed to improve internal company efficiency. They have often succeeded.

But the relationship between internal efficiency and business productivity has never been a one-to-one correlation, and it's ultimately subject to diminishing returns. Unless information technology can be used to directly provide customers with superior products and services, its potential long-term payoff will remain elusive.

The prospect of true electronic commerce is what made the Internet's emergence so exciting. Electronic data interchange (EDI), digital cash, online banking and Federal Express' Internet-based package tracking system are examples of technology applications that can transform major business activities.

True, many of these applications will take time to mature, but it's remarkable how quickly they have been relegated to the back burner. Rather than deal directly with the challenges of real electronic commerce, vendors have instinctively reverted to those standbys of internal productivity and efficiency. No wonder the whole intranet campaign often sounds like a recycled version of the client/server promises of the early 1990s and the paperless office claims of the mid-1980s.

What will these early intranets deliver? Online employee benefits information, product and sales literature, price lists, internal job postings, executive communications and company newsletters. Even the more sophisticated intranets seem to do little more than match what can already be done with Notes or even computer bulletin boards.

Don't get me wrong. Many of these intranet applications are worth pursuing; companies can save a lot of money by not printing and distributing benefit books. But reducing printing costs is hardly exciting given the overall promise of the Internet.

Intranet boosters argue that today's internal focus will allow security, management and development issues to be worked out safely behind the firewall. They say intranets are just necessary steps toward full-fledged electronic commerce.

I'm afraid sidesteps might be more accurate. Every dollar invested in internal automation is a dollar that could have gone toward a more compelling and useful presence on the World Wide Web, toward a supply-chain EDI application or toward an online customer service capability. The sooner the industry makes these external, customer-centric applications its top priority, the sooner the great potential of the Internet will be realized.

Moschella is senior vice president of research at Computerworld, Inc. in Framingham, Mass. His Internet address is david_moschella@cw.com.

Beware: Black-market chips are hot

Sam Albert

Stolen parts — snatched from vendors and PCs — may be lurking inside your used computer.

A new kind of "chop shop" is challenging law enforcement agencies. The victims aren't automobile owners whose cars have been stripped for black-market parts.

This time the crime wave involves memory chips, processors, hard drives and other valuable computer components that are being hijacked and smuggled at an alarming rate. The computer parts are much smaller and harder to trace, and the perpetrators are harder to track down.

Eventually, the stolen parts wind up inside used computer equipment that is refurbished and resold to the business community. Unknowing customers get inferior products and don't have much recourse when something goes wrong.

An average of $1 million worth of equipment is stolen from Silicon Valley companies each week, according to the International Computer Crime Squad, which has offices in New York, San Francisco and Washington. Armed gangs break into warehouses and hijack delivery trucks in the U.S. and overseas. Brazen thieves even break into corporate offices and snatch components out of large PC networks — only the damaged shells remain. Sometimes they remove just one chip, leaving behind a machine with less memory.

The components are sold on the black market, where they are turned over so often and so quickly, it is almost impossible to trace their origin. Often, serial numbers are obliterated. In extreme cases, chips are remarked. For example, an I486-33 chip might be restamped as an I486-66.

Another source of inferior parts is outdated equipment that was supposed to have been destroyed. A recent article in *The New York Times* described how a $1 million computer contained components that supposedly had been melted down for scrap three months earlier. The parts were stolen from the demolition company.

The FBI has formed a special squad to combat this crime wave, which may be controlled by organized crime rings. High-tech manufacturers are building special codes into components that can be activated only by the customer. Manufacturers are stamping the same identification number on the various components of each machine — a technique carmakers have used for decades.

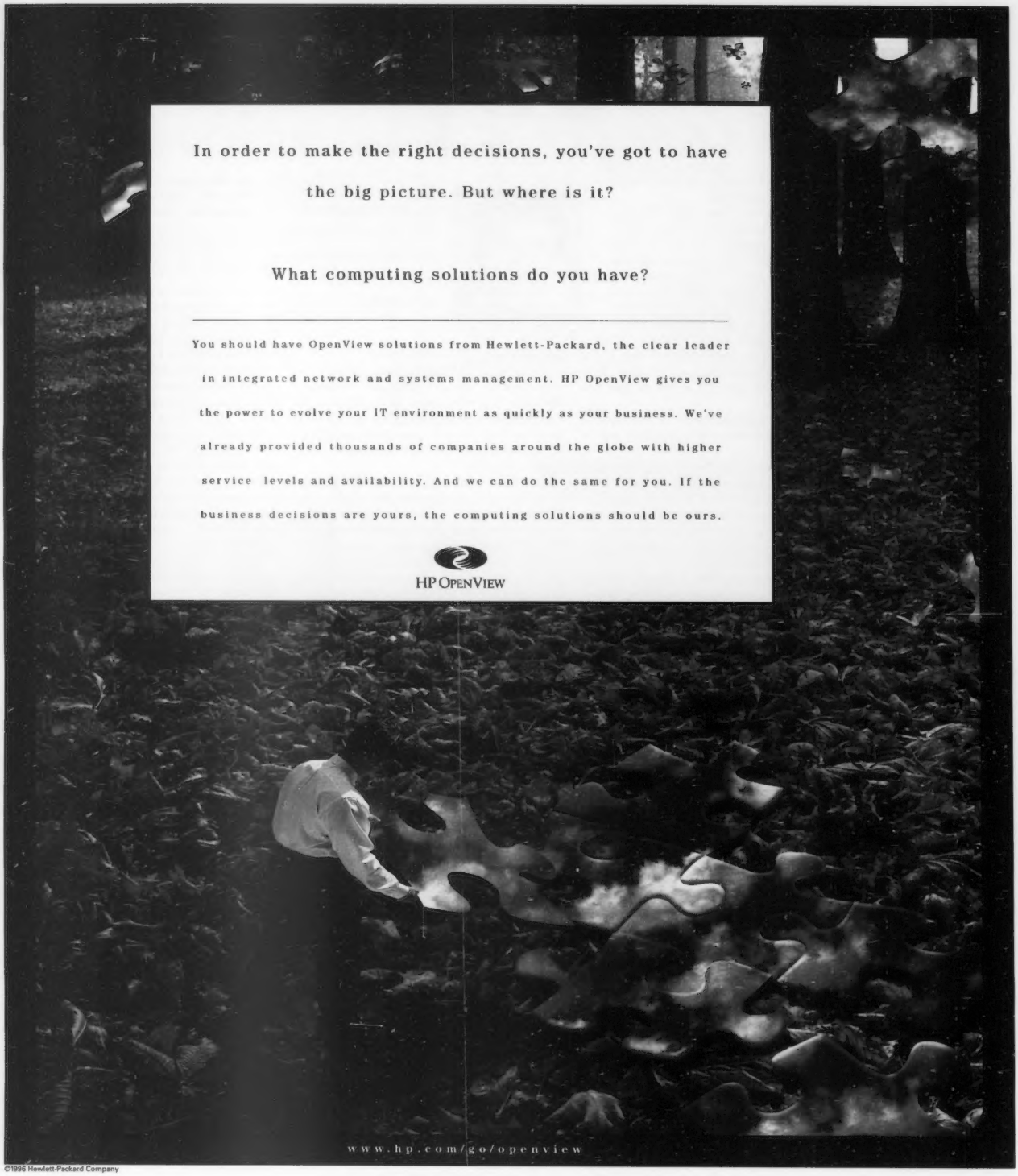
Insurance companies are joining the fight, authorities are running "sting" operations to infiltrate the gangs, and legislators are enacting stiffer penalties. Still, criminals usually stay at least one step ahead of the crime fighters. After all, the stakes are high. A Pentium chip, for example, can fetch $700 on the black market. With a worldwide chip shortage, there certainly is a demand for black-market components.

This news shouldn't dissuade you from purchasing used equipment. Used computers — especially if they have been refurbished and/or upgraded by a reputable dealer — can still provide reliable service at a good value. If your systems needs aren't state-of-the-art, a used system could be ideal.

How can you be sure the used equipment you acquire doesn't have black-market parts? Buy only from legitimate dealers and lessors. (Especially vigilant firms include GE Capital Corp., IBM Credit Corp. and US Computer Exchange, Inc.) Make sure the seller has clear title to the equipment, including all components. Insist that warranties cover all components.

Most of all, be suspicious of outrageously low prices. If the deal seems like a "steal," it might just be.

Albert is an industry analyst and president of Sam Albert Associates in Scarsdale, N.Y. His Internet address is samalbert@samalbert.com.



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PRODUCT REVIEW Video presentations shine on new ThinkPad, 43

Servers & PCs

PC buyers demand more

Manufacturers focus on systems integration

By Bob Francis

As corporations begin deploying PCs as part of enterprisewide computing systems, information systems managers are changing their buying habits. Not content with simply receiving PCs from resellers, they are demanding that manufacturers and resellers work with them more closely on systems integration and quality control.

At the same time, some corporations are using PC vendors with direct sales forces, such as Dell Computer Corp. and Gateway 2000, Inc., to handle systems integrator needs.

According to a recent study by International Data Corp. (IDC) in Framingham, Mass., the direct outbound sales channel showed a high growth rate, shipping 51.6% more units in 1995 (4.8 million), than in 1994 (3.1 million). Meanwhile, shipments by commercial resellers, including Electronic Data Systems Corp., grew 9.6%, with 9.9 million units in 1995, compared with 9 million in 1994.

IDC expects growth in the direct channel to slow this year, to 14.6%, while the commercial channel opens a bit to 14% growth.

Although there has been some concern that corporate PC purchases are slowing down, so far that hasn't happened. The overall PC market has continued to grow, and the corporate PC market has grown with it. "It just looks like corporate users are waiting until they see Windows NT 4.0 to upgrade," said Richard Zwetchkenbaum, an analyst at IDC.

Two recent deals illustrate the new relationships between customers and manufacturers. Compaq Computer Corp. in Houston recently completed the sale of 8,500 ProSignia 300 servers to General Motors Corp., working with EDS, a former GM subsidiary. GM's far-flung network of 8,500 dealers will take delivery of the systems from local resellers. Those resellers will also be part of the service and support effort.

Just a few weeks ago, Compaq's cross-state rival, Dell, in Austin, completed a $10 million deal with Delta Air Lines, Inc. in Atlanta, providing 3,700 OptiPlex GX PCs to the airline. Dell sells systems directly through an outbound sales force and also over the phone.

Complex transactions

Both systems are based on Windows NT Server applications and require a good degree of service and support. For the GM deal, Compaq used its fast-growing consulting group, which put together a prototype with EDS to demonstrate the viability of using the PC platform for the network.

"This is the type of system we need to be very, very reliable, because we're going to be using this more often and for more complex transactions as we progress," said Marvin Kay, GM's manager of dealer information management.

For Delta, Dell showed off its manufacturing plant to demonstrate how it could meet Delta's deadline and custom-load any software required for the project. Delta had previously relied on resellers to provide PC systems, officials there said.

Top PC vendors' worldwide shipments

	Q2 1995	Q2 1996
Compaq	1.43M	1.55M
IBM	1.06M	1.41M
Apple	1.01M	840,000
NEC	620,000	810,000
Hewlett-Packard	530,000	690,000
Total market	13.69M	15.95M

Source: Dataquest, San Jose, Calif.

System/390 picks up speed

By Michael Goldberg

To mainframe users, the tortoise that was the IBM System/390 is starting to act more like a hare — in a field where slow and steady may never cut it again.

On Sept. 10, the vendor is scheduled to announce its second-generation CMOS processor for mainframes and Release 2 of the OS/390 software bundle that includes the MVS Version 5.2.2 operating system, Unix functions, systems management features and other capabilities.

Key improvements in OS/390 Release 2 include a version of the Global Resource Serialization (GRS) utility optimized for Parallel Sysplex, a scheme that groups together up to 32 mainframes in one system. GRS is a systems management application that tracks the disk and I/O subsystems connected to each mainframe.

New features in OS/390 Release 2

- Faster compilers for C and C++ programs.
- Updated version of Global Resource Serialization, optimized for Parallel Sysplex.
- "Recommended Service" program to distribute bug fixes based on user needs.

Twice a year

The arrival of OS/390 Release 2 follows an IBM strategy, announced in March, of unveiling new mainframe software every six months. IBM is slated to offer other products this fall that could be included in future versions of OS/390: support for secure Internet transaction standards, such as Secure Hypertext Transport Protocol; World Wide Web gateways for DB2, CICS and IMS applications; and a new version of TCP/IP networking software for MVS [CW, Aug. 5].

Mainframe systems managers at the recent Share users conference said they see OS/390 as a way to stay current with System/390 software releases, including MVS. They said it also helps that they don't have to test different software components to make sure they work together; IBM is supposed to do that.

The twice-a-year OS/390 release schedule means L. L. Bean, Inc. "can get a fairly new system if we [upgrade] only once a year," said Ron Tustin, a senior systems programmer at the Freeport, Maine, retailer. If IBM offered few, or unpredictable, upgrades for OS/390, Tustin said, it would be difficult to stay current with the latest software.

David Floyer, an analyst at International Data Corp. in Framingham, Mass., said OS/390 bundling is a way for IBM to reduce the costs of its mainframe software at a time when hardware costs are falling. "Hardware is coming down in price ... and unless software comes down at a similar rate, the software will become an inhibitor to the [System/390] platform," Floyer said.

Floyer said IBM seeks to fix weaknesses in the first release of OS/390 with improvements to the C and C++ compilers. A new release of TCP/IP software for the mainframe is also needed, he said.

Key features

Neil Rondeau, a senior systems consultant at Revenue Canada in Ottawa, said his national agency is interested in both the TCP/IP enhancements and the new release of OS/390.

Adopting the OS/390 package should help the agency, which is short on staff and uses an older version of MVS, to adopt the latest functions while saving time with software installation and testing, Rondeau said. And the agency, which supports 50,000 end users, is moving to TCP/IP networking and needs an MVS version for its six mainframes, he said.

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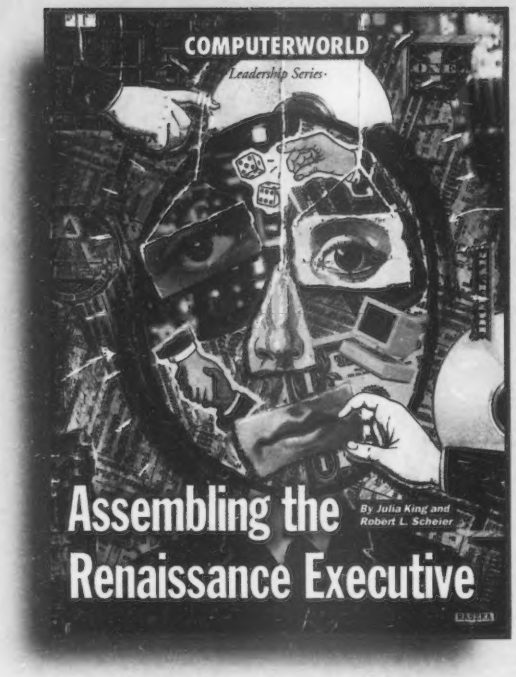

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New Products

NMB Technologies, Inc. has introduced NMB Scanner Keyboard.

According to the Chatsworth, Calif., company, the keyboard was developed in conjunction with Visioneer, Inc. and is a combination keyboard and PaperPort Vx scanner.

NMB's *Scanner Keyboard*

It includes Xerox Corp.'s TextBridge optical character recognition (OCR) software that reads the scanned images and converts them to text for editing.

NMB Scanner Keyboard requires 4M bytes of RAM; the OCR application requires 8M bytes. Pricing starts at $300.

▶ *NMB Technologies*
(818) 341-3355
www.nmbtech.com

PenWare, Inc. has introduced Portable PenWare100 Signature Pad.

According to the Palo Alto, Calif., firm, the product is a pressure-sensitive electronic signature pad that captures handwritten data and electronically transfers it to PCs through a serial connector. It can be used with a ballpoint pen and paper — with the paper placed on top of the pad — or with a detached nonelectronic stylus.

PenWare's *Portable PenWare 100 Signature Pad*

The $375 signature pad comes with a rechargeable battery and AC power adapter. It can also function as a mouse.

▶ *PenWare*
(415) 858-4920
www.penware.com

Procom Technology, Inc. has unveiled CD Tower-Rax, a CD-ROM server.

According to the Irvine, Calif., company, CD Tower-Rax is an eight-speed CD-ROM server that can contain up to 56 caddy- or tray-based CD-ROM drives.

It is available as a 47- or 77-in. rack enclosure system with up to eight racks of seven drives.

The servers come with 100- or 166-MHz Intel Corp. Pentium CPUs.

Purchasers can choose from eight preinstalled CD-ROM management software packages.

Pricing starts at $56,008.

▶ *Procom Technology*
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Olympus Image Systems, Inc. has announced SYS.230 Internal Personal Storage System, a 230M byte, 3½-in. rewritable optical drive. It has a sustained data transfer rate of up to 2.4M byte/sec. and features Olympus' superfine positioning optical pickup technology.

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Integrated Audio	16 Bit Sound Blaster
IDE Support	PIO Mode 4
Virus Protection	McAfee Anti-Virus

Comparative Features	Bravo MS	Compaq Deskpro 4000	Dell Optiplex GXM	HP VL4
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512k PB L2 cache U/G	•		•	
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Note: Data for competition obtained from company literature, accurate as of 7/15/96.

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Video presentations shine on new ThinkPad

By Jeffrey Gordon Angus

IBM's newest laptop offering in its high-end ThinkPad 760 series, the 760ED, has rolled even more innovations into an elegant, modular, breathtakingly designed machine.

PRODUCT REVIEW

Most noteworthy, the 760ED has on-board support for MPEG-2 video. Combine that with a 12.1-in. thin-film transistor color screen and a snap-in quad-speed CD-ROM drive, and you have a powerful presentation machine — one that can handle any computer presentation, including those with motion pictures or videos.

Unlike the usual high-end computer systems that show QuickTime or Video for Windows movies, the MPEG-2 display can fill an 800- by 600-pixel screen — no little window for you to squint at — with smooth, full-motion video. This raises the stakes for your mobile sales force's presentations. One of your competitors will, sooner or later, take advantage of this capability to make killer sales or policy pitches.

Video handling

The 760ED handles MPEG-1 as well, and its "enhanced video" hardware will capture video from sources such as televisions or VCRs. The system can play back the QuickTime and Video for Windows clips, but QuickTime and Video for Windows don't take advantage of the advanced MPEG capabilities. Their output is still likely to be choppy without perfect tuning.

This version of the ThinkPad comes with a full array of standard features. The most commendable are the large screen, full-size keyboard and the TrackPoint III pointing device. This latest revision of the eraser-like device in the middle of the keyboard is a noticeable improvement over the previous version, which was already the superior laptop pointing device. The new version has smoother, more easily mastered action, particularly in the way it accelerates when held to a direction.

As with the rest of the ThinkPad line, the modularity of the 760ED is outstanding. Batteries, floppy drives, hard drives or CD-ROM drives — not to mention a second battery or a wireless cellular telephone/fax — snap in easily but securely into "ultra bays." Their placement is in what I call the "German U-boat design," in which no millimeter of space is wasted, and it is so complex to fit everything together that the manual will be required for most users.

Less-appealing features are the built-in speakers — they lack dynamic range — and the limited battery life. I got a maximum of about an hour doing light work with the CD-ROM and a 1.2G-byte hard drive installed. Even with the option of putting a second battery into the ultra bay, this ThinkPad is best suited for people who most often use a laptop that is plugged in.

IBM ThinkPad 760ED

Video support: MPEG-1, MPEG-2

Screen: 12.1-in. thin-film transistor

CD-ROM drive: Quad speed (snaps in)

Pointing device: TrackPoint III

Starting price: $3,399

Overall rating: A–

The 760ED line starts at $3,399, so you are unlikely to be deploying these to everyone who wants one.

I haven't seen a more impressive Pentium-powered laptop for general use, and I think it helps to create a new niche for laptops that offer a new level of portable presentations.

Angus is a freelance writer and consultant at The Data Works in Seattle.

FOR REPEATERS AND ADAPTERS, TURN TO PAGE 47.

Briefs

Hitachi to bundle modems

Hitachi PC Corp. in San Jose, Calif., and **U.S. Robotics Access Corp.** in Skokie, Ill., recently announced an agreement to integrate U.S. Robotics modem technologies into Hitachi notebooks. Officials from the two companies said that by integrating plug-and-play modem technology into Hitachi notebooks, the notebook vendor can get around some of the problems in using PC Cards, including thermal issues that lead to overheated components.

HP links HP 9000, SNA...

Hewlett-Packard Co. has introduced new versions of its SNA connectivity products for linking HP 9000 Unix servers to **IBM** mainframes and AS/400s.

...and Web support

HP has also set up a World Wide Web site that HP 9000 users can access to review and order software updates. Customers can also check on the shipment status of upgrades via the Software Update Manager site, which is at us-support.external.hp.com. The Web site replaces HP's previous approach of sending out updates to all users of a product with support contracts.

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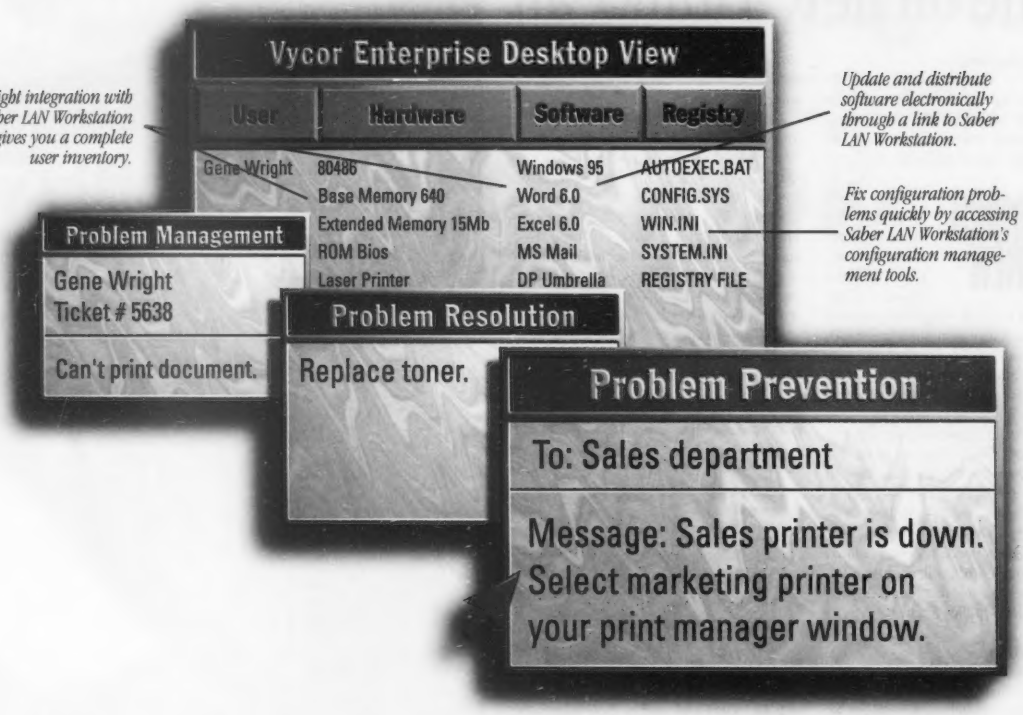

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Desktop Configuration Management	Yes	No
Software Distribution	Yes	No

*As reported by former Remedy customers.

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PRODUCT REVIEW Borland's Visual dBase proves you can teach an old database new tricks, 48

Software

Database decorum

Storage glitches, clogged discussion sites may steer users away from groupware rollout

By Tim Ouellette

Discussion groups often are the first groupware application that users try. But if administrators don't handle the influx of new users correctly, discussion groups could also be the last groupware application that users try.

Discussion databases can become overloaded, disorganized and slow, which may turn off some groupware users.

1 Designate an employee to be responsible for moderating the database

Increasingly, companies — especially global firms — are considering groupware to allow their employees to work together. To these large corporations, the successful use of these discussion groups is becoming an important way to sell the concept of groupware and get users involved.

Nabisco Corp., for example, recently installed Microsoft Corp.'s Exchange and has lots of discussion taking place in Exchange's public message folders.

2 Design Notes databases so users can post to specific topics. This will prevent information from being categorized incorrectly

"We are using public folders to publish information and to introduce collaboration to users," said Erik Iversen, director of application development services at the Parsippany, N.J., company.

Cleaning house

Nabisco has about 3,500 users on Exchange, and more users are joining the discussion groups.

Iversen said his challenge now is to find ways to make sure the folders don't get too disorganized.

3 Know when a telephone call will save time vs. writing a discussion entry

To keep them organized requires some extra effort by administrators (see accompanying pointers).

For example, users of Lotus Development Corp.'s Notes should tweak the discussion database template that ships with the software, said Heidi Dibble, senior business analyst at Cargill, Inc. in Minneapolis and a Notes user rolling out Notes 4.0.

4 Use document links in Notes to build a "meta structure" that will guide users through the pile of postings in the discussion

Tweaking can include customizing the way users can view discussion postings and requiring that people who post information enter a keyword to categorize their contributions.

"It is tempting to take the [Notes] discussion databases as is and not do anything to it," Dibble said. "But it is worth doing the extra work."

Otherwise, the databases can become impossible to navigate, and users could miss valuable information that may be inside, she said.

But the Internet could add a twist to those systems.

Usenet discussion groups are already popular across the Internet.

5 For E-mail-based systems such as Exchange, point users to public folders rather than replicate the folders. This will save storage.

Products such as Notes and new Internet groupware offerings from Radnet and Netscape Communications Corp. will let users download Usenet newsgroups into their products.

This would add a layer of storage management issues for systems administrators.

When more users join the discussion groups, the network will have to manage bandwidth issues and a heavy storage burden.

"Some people don't imagine [a discussion database] will get to be 20M or 30M bytes, and it gets really big and unmanageable," Dibble said.

Bundled bug fixes on way

By Craig Stedman

The constant flow of operating system bug fixes is still soaking Unix shops. But users who are tired of swimming upstream to find and install fixes finally may be able to relax a bit.

Bug fixes aren't becoming endangered by any means. But Unix vendors are starting to respond to user demands for less taxing, and hopefully safer, methods of updating their systems with fixes, or patches.

Patch work

Hewlett-Packard has enacted the following changes to get HP-UX patches to customers

Before changes

- User accesses HP's software Web page and clicks on patch icon
- After choosing HP-UX platform, user sees list of individual patches
- User sifts through patch descriptions written in various formats
- Applicable patches are downloaded and installed one-by-one

After changes

- CD-ROM with pretested patch bundles is shipped to customers every two months
- Descriptions are more detailed, and a standard format is being developed
- User looks through list of patches and decides which to install

Compatibility issues

Hewlett-Packard Co. late last month quietly began to release CD-ROMs that contain pretested bundles of patches for its HP-UX operating system. Sun Microsystems, Inc. and IBM started similar patch integration and testing programs earlier this year.

It's about time, said a half-dozen information systems managers who oversee Unix servers and workstations. Until now, patches often have been released individually, without being tested against one another. Instead of solving problems, this can create new ones if different patches have hidden incompatibilities, the customers said.

"You start out with an inherent trust that what you get works. But then you fix [your operating system] one place, and it springs a leak somewhere else," said Stan Johnson, director of MIS at World-

Patching problems, *page 51*

Analysis tool opens the door for hackers

By Gary H. Anthes

A powerful new class of tools is appearing to help you find system flaws. The bad news is the tools also give enemies new ways to hack in to your software.

According to the Computer Emergency Response Team (CERT) at the Software Engineering Institute, a tool called LibC/Inside can let the "intruder community" find holes in software even without access to the source code.

Systems security

Software vendors and users have traditionally believed that hackers cannot "reverse engineer" software without source code, the CERT said.

"This takes it a step further," said Jim Ellis, a senior technical staff member at the CERT at Carnegie Mellon University in Pittsburgh. "The idea is not new, but the techniques to do it are becoming more sophisticated."

Common tools

John Pescatore, a senior consultant at Trusted Information Systems, Inc. in Rockville, Md., said tools to analyze object code are becoming more common as users look for ways to make new software work with legacy applications, for which documentation and source code may be missing or out of date.

They are even being used to find date routines in old code to

Tool flaws, *page 47*

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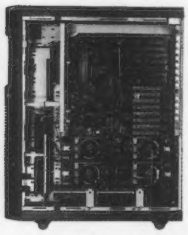

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Tool flaws

CONTINUED FROM PAGE 45

head off the year 2000 problem, he said.

For example, LibC/Inside, from Electris Software Ltd. in Manchester, U.K., traces the execution of object code, and the data it handles, to locate bugs and improperly implemented features.

According to Ellis, it is the first tool that can capture and report library calls, including the arguments passed to subroutines and the values returned.

Common computer attacks

- **Linux machine compromises** – Intruders exploit Linux vulnerabilities to plant Trojan horses or password sniffers
- **Telnetd in Linux systems** – Vulnerabilities are increasingly exploited
- **Password cracking** – Unauthorized access as a result of decrypted passwords
- **Sendmail attacks** – Vulnerabilities in sendmail are exploited to obtain password files
- **CGI-bin vulnerabilities** – CGI-bin programs are subverted to gain unauthorized access to a system or to execute unauthorized commands
- **Mail spamming/spoofing attacks** – Techniques used to fill up someone's disk or otherwise flood a network or host

Source: CERT Coordination Center, Software Engineering Institute; Carnegie Mellon University, Pittsburgh

A security specialist used LibC/Inside to demonstrate a flaw in Sun Microsystems, Inc.'s Solaris operating system: Under some circumstances, a function value becomes too large and overflows a buffer.

"This vulnerability could be exploited to execute commands remotely, without owning an account on that system," said a description at Electris' World Wide Web site (www.electris.com).

Users count on organizations such as the CERT to expose those kinds of security threats and on vendors to patch holes that are found, said Ed Hepker, manager of information security at USA Group, Inc. in Indianapolis. "There's not a lot I as a user can do about this," he said.

But Hepker added that users must religiously apply the vendor-supplied fixes. "You absolutely have to have all the patches in there. This makes it even more important," he said.

Bad intentions

LibC/Inside joins a growing list of software utilities, such as the Security Analysis Tool for Auditing Networks, that can be used responsibly or maliciously.

"We have no knowledge that this tool is being used for intrusion," said Larry Rogers, a senior technical staff member at the CERT. "The product was developed to benefit the software engineering community doing program analysis."

But mindful of the potential for mischief, Electris tries to restrict sales of LibC/Inside to legitimate users, said Neil Woods, a software engineer at the company. "We are very careful who gets copies of it," he said.

Woods said customers use it to find security flaws in their systems and for debugging. For example, it can help pinpoint configuration problems, he said.

Rogers advised that users be made aware that their systems may be at risk, even when access to source code is carefully guarded.

Pescatore said all source and object code should be protected behind firewalls. He also said that because object code can be maliciously modified — by adding a Trojan horse, for example — and replaced, code should be placed in read-only files.

For more information, see ftp://info.cert.org/pub/.

Briefs

Borland boosts C++

Borland International, Inc. plans to add object-oriented analysis and design tools to its C++ development system. The Scotts Valley, Calif., company has bundled Together/C++, an object modeling tool set from **Object International, Inc.** in Raleigh, N.C., with Borland C++. The upgraded version, which has been dubbed Borland C++ Development Suite with Design Tools 5.0, will cost $849.95.

Web tools debut

Bluestone, Inc. in Mount Laurel, N.J., has shipped Windows NT and Windows 95 versions of its Sapphire/Web development tool kit. The $2,995 product supports Java. A scaled-down version of Sapphire/Web for building home pages and small World Wide Web applications costs $295. O'Reilly & Associates, Inc. in Sebastopol, Calif., shipped a new version of its Web server, WebSite Professional, with a Java programming module.

Next ships OpenStep

Next Software Inc. in Redwood City, Calif., is shipping its OpenStep application environment for Windows NT. OpenStep costs $499. It is an object-oriented software layer that lets NT users run applications originally developed for NextStep, Next's proprietary operating system. A complete set of OpenStep development tools for NT will ship this fall.

Unifying the Web

Unify Corp. in San Jose, Calif., has unveiled Web support and a new release of Vision, the firm's cross-platform visual development environment. Vision 3.0, which costs $7,200, will ship this month. Vision/Web, which automatically generates Java code to give users access from the Internet, costs $17,000 per site.

Visual dBase now does intranets

Intranet Tools add-ins help to boost Borland's flagship database builder

By Howard Millman

In the race to fuel the exploding demand for Internet and intranet applications, every major database vendor is enabling its applications for the World Wide Web. The vendors seek to provide remote and real-time access to critical data that resides in back-end repositories.

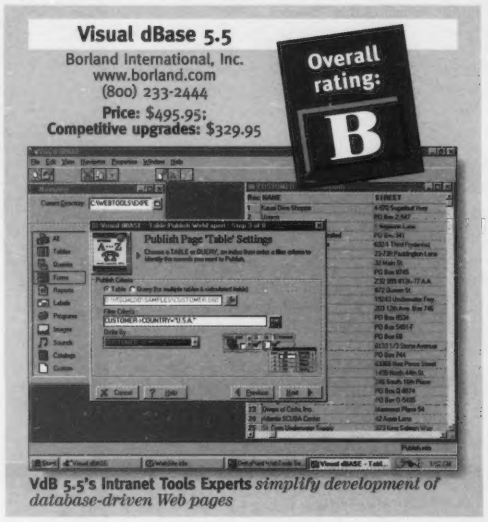
Borland International, Inc. recently added features to its Visual dBase (VdB) 5.5 relational database management system to allow Xbase developers to run their VdB applications on internal Web sites. Testing reveals that the new features will readily fulfill the expectations of firms that run small to midsize intranets. But a lack of bulletproof security will limit the applications' use on the Internet.

PRODUCT REVIEW

To Web-enable the software, Borland added Intranet Tools, comprising three new utilities: WebTools — dBase extensions that manage Hypertext Markup Language (HTML) and Common Gateway Interface (CGI) data exchanges; TableSearch Web Expert; and TablePublish Web Expert.

The add-ins require VdB 5.5 and the VdB compiler. Together, the modules form a reliable, versatile hybrid that provides an easy way for companies to distribute information. The two Web Expert tools and samples will help novice developers rapidly create Web-centric applications.

For example, the TableSearch Web Expert guided this reviewer through all the required steps to create an Xbase script. The steps included selecting a table for a search and dynamically generating a compiled executable. VdB automatically generates the resulting HTML form, which you can customize.



VdB 5.5's Intranet Tools Experts *simplify development of database-driven Web pages*

Interface features

Intranet Tools provides a set of predefined methods — classes plus encapsulation and inheritance. This melange of visual and object-oriented features lets developers port their VdB applications to intranets by using the Windows CGI.

Win-CGI, a Windows-specific version of Unix' CGI, manages the exchange of data between an HTML browser client and a back-end database.

TableSearch Web Expert automatically generates executables from the class libraries included with VdB. Besides streamlining the development process for simple applications, the Web Experts provide a framework for building more complex applications.

The programs that the Web Experts generate use native Xbase syntax, so Xbase developers should feel comfortable. And the comparatively simple code used by the programming language can be easily customized to accommodate a variety of data search and manipulation procedures. You must open the original script to edit the code.

Intranet Tools offers three levels of security for internal use: log-in security, data encryption and table/field-level protection. But the add-ins lack the robust security features that are advisable if applications are destined for the Internet.

Visual dBase, a highly regarded if somewhat venerable relational database manager, long ago smoothed its rough edges. When launching Version 5.5, you are treated to a visually rich interface that offers easy, intuitive access to an extensive tool set. The polish extends through creation and modification of databases.

Intranet Tools launches an additional VdB session with each query. But Borland uses a clever caching scheme that avoids the need to reload the whole program.

Forms follow function

Tables and queries lack the full suite of design features available for building forms, but the omission seems sensible. Rather than muddle the project, Borland places most of VdB's tools in the forms interface, where they are most needed.

Another tool to speed development, Two Way Tools — available in form design, menus and SpeedMenus window — has a dual-pane window. The lower pane displays the text equivalent of commands keyed in — or entered via mouse clicks — to the upper pane.

Distributable executables, invaluable for providing remote and real-time access, can be customized with an installer routine and splash screens. An Application Deployer handles file compression and splits files across diskettes or transfers them to a CD-ROM.

Millman operates the Data System Services Group, a consultancy in Croton, N.Y. He can be reached at hmillman@mcimail.com.

Sagent NT suite offers users a Data Mart Solution

By Dan Richman

Users can create, query and maintain Windows NT data marts in a single package announced last week.

The Sagent Data Mart Solution, from start-up Sagent Technology, Inc. in Menlo Park, Calif., lets users work with relatively low-cost data marts.

Unique suite

Data marts usually pertain to a single subject — say, marketing or finance — whereas their big brothers, data warehouses, contain all departmental or even companywide data and so pertain to multiple subjects.

The Sagent suite appears to be the first of its kind for Windows NT.

But analysts said Sagent still faces tough competition from vendors of individual data mart components.

The Data Mart Solution includes the following features:

- A Windows NT-based server that prepares and stores up to 50G bytes of data.
- A Windows NT- or Windows 95-based tool, dubbed Design Studio, for copying operational data from mainframe DB2 and popular Unix databases into the Windows NT server.
- For those same platforms, a tool called Information Studio for querying, analyzing and reporting on data. Another tool, called Admin, administers multiple data mart servers from one console.

The market for data marts will swell by 20% annually over the next five years, compared with the computer industry's overall growth rate of 13%.

For $50,000, customers receive 20 copies of Information Studio, plus one copy of each of the other components.

Users can create a working data mart within 90 days, claimed Perry Mizota, Sagent's vice president of marketing.

Growing trend

The market for data marts will swell by 20% annually during the next five years, compared with the overall computer industry's 13% growth rate, said Clare Gillan, vice president of applications research at International Data Corp. in Framingham, Mass.

Beta users gave Data Mart Solution the thumbs-up.

They said they particularly liked its speed, ability to let users share reports and queries, simplicity and Windows NT orientation.

"We looked at [products from] Brio Technology and Information Advantage, and though they're more mature than Sagent, they give us stuff we don't need and charge us for it," said Coleen Wagner, a consultant at Siemens Rolm Communications, Inc. in Santa Clara, Calif.

Sagent will face tough competition from IBM and its similar Visual Warehouse offering for OS/2, Gillan said.

Sagent also will face competition from popular query tool and report-writer vendors such as Business Objects, Inc., Cognos Corp. and Seagate Technology, Inc., Gillan said.

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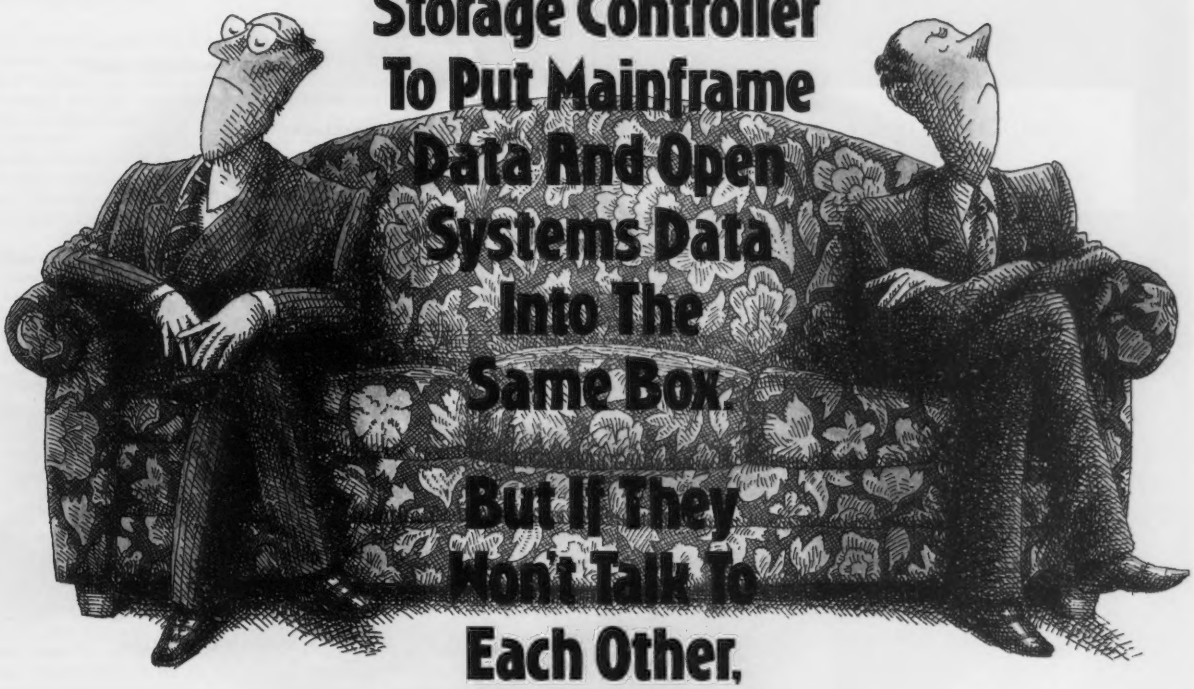

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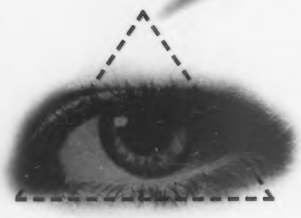

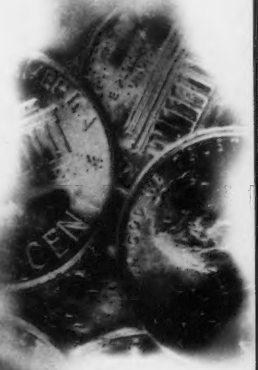

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Patching problems

CONTINUED FROM PAGE 45

port LA, the port authority for Los Angeles in San Pedro, Calif.

Partly because of the strain that patches have caused, the port authority recently added a second test system to its lineup of six Sun servers.

Vendors "kind of passed on the [testing] obligation to in-house [information technology] people," Johnson said.

Big burden

"To know the actual interaction between all the different patches is a pretty monumental task" for users, said Bob Schultz, systems administrator at Nokia Mobile Phones' research lab in San Diego.

Schultz has been paying HP to determine which patches he needs for the more than 100 HP 9000 workstations and two servers that he manages. HP then creates a custom patch bundle for him to install.

The burden of examining anywhere from two to 20 HP-UX patches per week is driving Dwight Wolfe, manager of Unix systems at CNA Insurance Co.'s Personal Lines division in Chicago, to negotiate a similar service deal with HP for his two most mission-critical servers.

"Patches can do all sorts of things to you, and if I have problems with those two servers, people come in and yank me by my ears, and it's not pretty," Wolfe said. He said he expects HP's patch service to cost about $1,000 per month.

The generic bundles of patches that HP, Sun and IBM are making available for free may not make fee-based patching services obsolete, users said.

But the bundles should ease the process of finding patches, and they may give IS managers some assurance that the fixes will work together.

Not just Unix

The patching problem isn't limited to Unix. Many AS/400 shops bemoaned the large number of patches that followed IBM's major 1995 software revamp for AS/400.

Network operating systems also have been heavy on bug fixes.

Unix users said patch volumes haven't worsened and are improving in some cases — notably Sun's once notoriously buggy Solaris.

But complaints about the patch process are unwavering and have become more widespread as Unix servers take on more important processing jobs, acknowledged David Scott, marketing manager for HP-UX.

Patching "has just never been done well, except maybe when you had on-site service engineers in mainframe environments," Scott said.

Double trouble

Steve Morgan, director of hardware and database technologies at Robertson CECO in Columbus, Miss., said it takes the maker of prefabricated steel buildings twice as long to install the required Solaris 2.4 patches on its SPARC-based workstations than it does to initially configure the machines.

New Products

ExecuSoft Systems, Inc. has introduced Symbiator 2.2.

According to the Wayzata, Minn., company, Symbiator 2.2 is a replication tool for IBM AS/400 data that can support bidirectional replication of data from SQL databases in near-real time.

It was designed to let users replicate from an AS/400 to any database that has support from an Open Database Connectivity driver.

Symbiator 2.2 also can execute data type conversions between an AS/400 and SQL Server databases and ensure data integrity by supporting full commitment control and support of computed fields.

Symbiator 2.2 lets SQL Servers call a procedure and execute commands or SQL statements against an AS/400.

It also allows an AS/400 to function as a client by letting AS/400 applications write to programming interfaces to execute or retrieve data from the SQL Server databases.

Pricing for Symbiator 2.2 starts at $5,990.

▶ *ExecuSoft Systems*
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Baseline Data Systems, Inc. has introduced Info Accelerator 4.0.

According to the Torrance, Calif., company, Info Accelerator 4.0 is a contact manager that runs in word processing programs, including Microsoft Corp.'s Word, Corel Corp.'s WordPerfect and Lotus Development Corp.'s Word Pro.

InfoAccelerator 4.0 also integrates with accounting packages such as Intuit, Inc.'s Quicken and QuickBooks and Timeslips Corp.'s TimeSlips. It includes a relational database that lets users store up to 32,000 contacts per file, with 10 telephone numbers, 10 addresses, 100 search keys and 32,000 characters of notes per entry.

Info Accelerator 4.0 installs a pull-down menu on the tool bar and gives users access to a phone book, calendar, "to do" list and document-generation features.

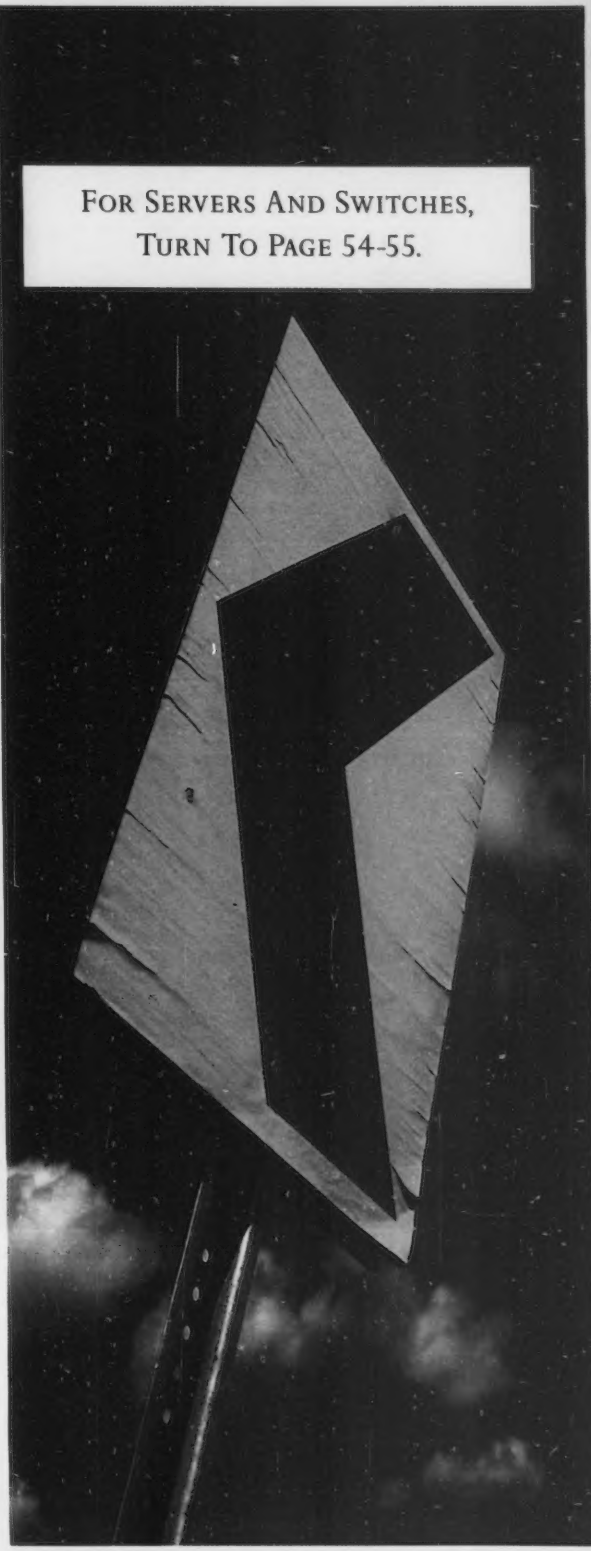
Pricing for Info Accelerator 4.0 starts at $100.

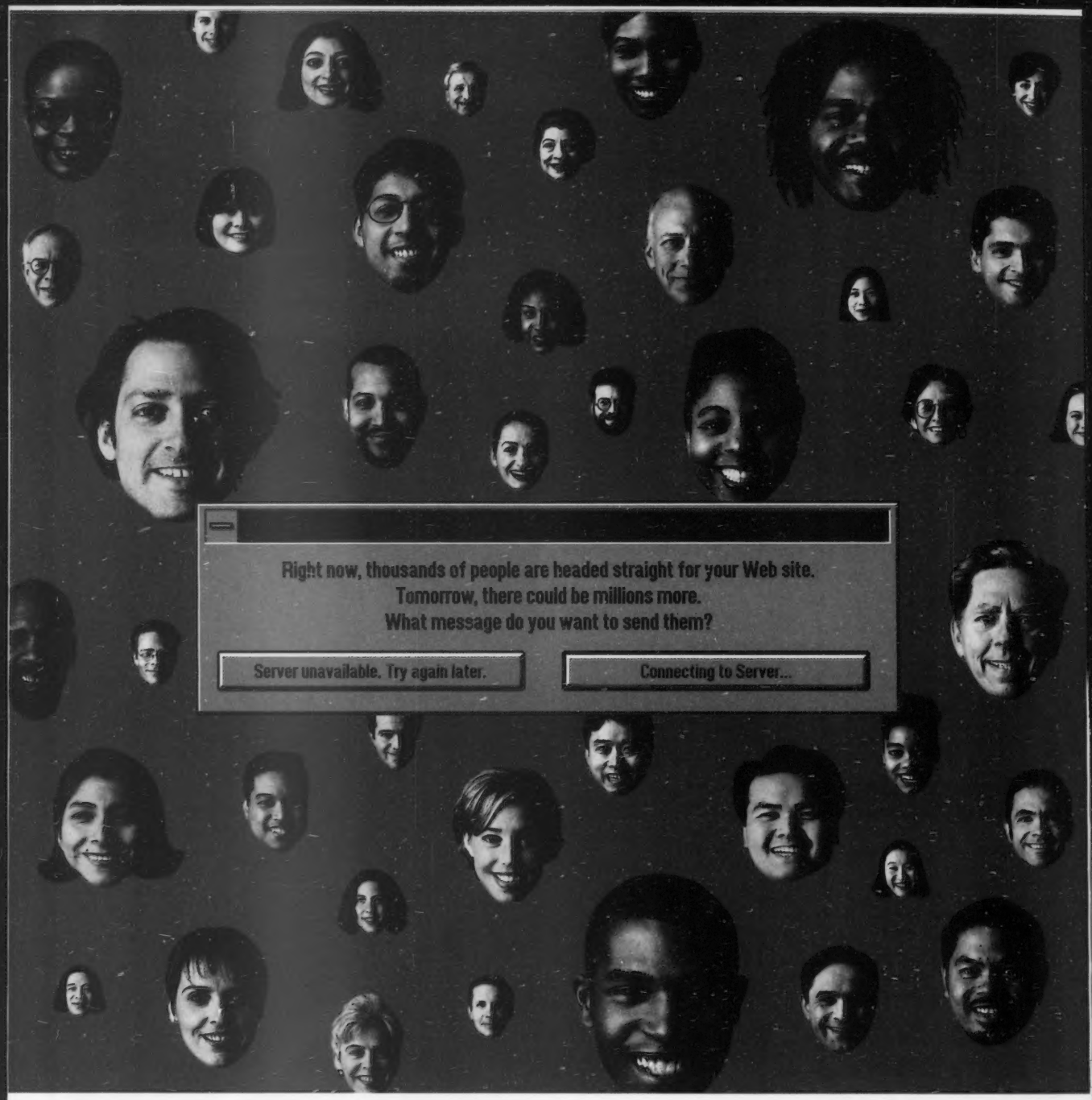
▶ *Baseline Data Systems*
(310) 214-8528

Product short

Eagle Point Software Corp. has introduced Picture Perfect, a Windows-based visualization product series that lets users create photo-realistic designs of new buildings or remodeling projects from photos or blueprints. Digital images can be scanned from photos or blueprints that are photographed with a digital camera or a camcorder with a still-video capture device. Cost: $80. Eagle Point Software, Dubuque, Iowa, (319) 556-8392, www.netins.net/showcase/eaglewww.

FOR SERVERS AND SWITCHES, TURN TO PAGE 54-55.





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TOKEN RING

Two developments put Token Ring in the center ring, 56

The Enterprise Network

Network consolidation gets assist from Netsys

By Patrick Dryden

New network planning and troubleshooting software from Netsys Technologies, Inc. can help double-duty administrators — those who must maintain separate SNA and TCP/IP networks — shift legacy traffic to a client/server backbone.

A major upgrade to Enterprise/Solver from the Palo Alto, Calif., company adds support for protocols that route SNA session traffic. Administrators can prepare or diagnose complex router configurations when they try to consolidate SNA and TCP/IP networks.

PATRICK DRYDEN

"Netsys software and our custom scripts [let us] compare files and report differences."

— DAN TULLEDGE, ALLIEDSIGNAL

Net combo

Trial-and-error testing isn't a pretty sight on a production network, said Vincent Miller, senior network analyst at Washington Mutual Bank in Seattle. "Netsys helps you sleep better at night," he said.

Miller must build and validate a combined SNA and TCP/IP wide-area network that is doubling in size following a series of corporate acquisitions. He said he eagerly awaits expanded protocol support from Netsys to maintain the integrity of networks that use Source-Route Bridging. Then he can easily discover duplicate Token Ring numbers in router configurations, for example.

"We want to find this before our customers trip over it," Miller said. "Now we can test router functions like protocols or access lists and predict the new configuration's success and performance."

Banks and organizations such as retailers, insurance companies and hospitals are integrating dual network connections — especially for remote offices — to retain SNA connectivity and reduce the recurring costs associated with it, said Glenn Gabriel Ben Yosef, president of Clear Thinking Research, Inc., a network consultancy in Boston.

Ben Yosef said SNA endures because "a lot of fear remains about moving to client/server networks." Those networks still can't match the security, redundancy and fault tolerance of the mainframe environment, he said.

Netsys definitely will help "get SNA on-

Netsys, *page 56*

Briefs

Protection for fast nets

IBM has introduced Network Recovery Service, designed to protect and recover customers' high-speed networks. The service relies on a Synchronous Optical Network to link customer locations with IBM recovery facilities.

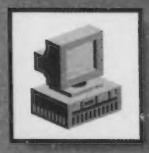
Novell gets wiser

Novell, Inc. is shipping the third beta release of GroupWise 5.0, the Provo, Utah, firm's upgrade to its GroupWise 4.x electronic-mail and groupware system. The beta release, which focuses on improved performance, follows two previous beta releases for development and feature testing. The shipping version of GroupWise 5.0 is due by fall.

Notes tools ship

Lotus Development Corp. is shipping the free CC:Mail and Simple Message Transport Protocol message transfer agents (MTA) for Notes. The MTAs let Notes servers run natively in CC:Mail or Internet messaging environments, which removes the need for gateways. An X.400 MTA will be available within a month for $4,995. Lotus also is shipping Domino, software that lets World Wide Web browsers access data in Notes servers. Domino will be included as part of Notes 4.5, which is due next month.

Banking on ISDN



A Mellon Bank customer at a bank branch or supermarket uses a PC to call an expert for a two-way videoconference

By clicking on a mouse button, the customer routes the call through a video call center on ISDN lines

A Mellon Bank consultant appears on screen to discuss mortgage rates or other banking needs

Bank tries ISDN two-way video

By Kim Girard

Mellon Bank Corp. is reaching out to customers via a new service: two-way videoconferencing that users can access with the click of a mouse button.

Mellon Bank officials see the video network — to be built by Bell Atlantic Corp. with Integrated Services Digital Network (ISDN) lines — as a retail channel to complement existing services.

Using a PC, customers in bank branches and grocery stores can consult with experts on mortgages, private banking, loans or investments.

Pittsburgh-based Mellon Bank adopted ISDN three years ago for desktop videoconferencing. The company plans to use the technology to connect 450 sites in four states to a video call server.

Quick info

The call server will route customers to a financial expert at a bank call center, branch office or the expert's home. Before the agent answers the call, the customer's name and other relevant information will pop up on the agent's PC screen.

ISDN transports voice and data services on a call-by-call basis at rates of up to 128K bit/sec. One analyst questioned whether that bandwidth will be enough.

"These guys think 128K bit/sec. will be good enough, but 384K is the sweet spot [for videoconferencing]," said Steve Kimball, a research analyst at Meta Group, Inc., a consultancy in Stamford, Conn. "There'll probably be some quality issues. [Customers] are not going to see the TV quality they're used to."

But an extra channel to sell its services will give Mellon Bank a market edge, said Jim B. Moore, president of Mentis Corp. The research firm in Durham, N.C., specializes in information technology in financial services.

"It creates increasing pressure on those who don't offer it to have it," Moore said.

Only 7% of 1,000 banks with more than $4 billion in deposits used ISDN lines for videoconferencing on their network last year, according to a Mentis survey. Only 4% used video links between bank and customer.

The videoconferencing service will be rolled out next year across Pennsylvania, New Jersey, Delaware and Maryland. Mellon Bank's Pittsburgh and Philadelphia branches are beta-testing the application.

Teloquent Communications Corp. will provide the video call queuing and routing, and PictureTel Corp. will provide the videoconferencing equipment.

Bell Atlantic in Philadelphia, will offer the video banking application to customers in October.

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COMPAQ

Has It Changed Your Life Yet?

Token Ring in center ring

Token trauma: Stalled spec forces users to put their high-bandwidth apps on hold

By Bob Wallace

A slowly developing specification that would help IS managers use Token Ring switches more efficiently has users up in arms as they make plans to implement higher-bandwidth applications.

A key rule for implementing switches for client/server networks is to ensure that the pipes between switches and heavily used servers are bigger than the pipes that connect users to the switches.

But because there is no standard way to do that with Token Ring switches, information systems managers are forced to provide 16M bit/sec. links to servers and users alike. That creates bottlenecks for many users.

The IEEE won't have a standard for Full Duplex Token Ring until year's end at the earliest. But some vendors, such as IBM and Cabletron Systems, Inc., already offer products that are based on early versions of the specification and provide 32M bit/sec. pipes. Analysts said the schemes could require upgrades for adapter cards and switches.

Too risky

Users, who are losing patience, aren't excited about prestandard schemes.

"We're not taking a chance that one of these may not become [standards-compliant] because that creates problems further down the road," said Mike Forand, an executive systems consultant at Paul Revere Insurance Group in Worcester, Mass. Paul Revere is a longtime Token Ring shop with a 1,200-node network. "We're concerned because we plan to roll out an imaging application that requires high-speed access to servers, and the [16M bit/sec.] pipe probably won't be large enough."

Fiber Distributed Data Interface (FDDI) links to servers are options for users who don't want to wait for Full Duplex Token Ring. But when users see that standard high-bandwidth options already exist in Ethernet switches, they have a tough time justifying the extra expense.

FDDI cards "would give us [100M bit/sec.] pipes to servers, but that would likely be very expensive," Forand said. Some FDDI cards cost more than $1,000 each. Analysts said the lack of a Full Duplex Token Ring standard hurts the Token Ring market.

"Users are going to be very reluctant to roll out client/server applications if they can't get the high-speed links they need to their servers," said Eric Hindin, a senior program manager at The Yankee Group, a consulting and research firm in Boston.

Some users seem close to giving up on a standard for Full Duplex Token Ring.

"We've been waiting since Day One for a standard to be completed, and it'd sure be great for providing access to file servers. But we're not sure products will ever hit the market," said Randy Kitchens, a technical consultant at First Health Corp., a large Token Ring shop in Glen Ellen, Va.

Kitchens said he would consider a prestandard approach if the products could be easily upgraded to be standard-compliant. But other users have stopped waiting and bought the needed products.

Kraft, Inc. bit the bullet and moved to FDDI, partly to save time.

"We're planning to move quickly to [SAP AG's] R/3 and need the bandwidth to make that work," said Herr Steinmann, manager of computer networks at Kraft's headquarters in Germany. "We didn't consider going with the [16M bit/sec.] pipes to our [existing] file and print servers."

Widening the pipes

THE GOAL:

To have pipes from Token Ring switches to servers that are larger than the pipes to the desktop.

THE PROBLEM:

Client/server applications cause bottlenecks when switches provide dedicated 16M bit/sec. pipes to desktops and only 16M bit/sec. pipes to servers.

THE SOLUTIONS:

- Wait for a slowly emerging standard that would specify 32M bit/sec. pipes to servers
- Go with a proprietary prestandard 32M bit/sec. scheme.
- Opt for a higher-speed pipe such as FDDI at 100M bit/sec.

Switching market could sizzle with Cisco/Nashoba deal

By Bob Wallace

In a major boost for IBM users, switching high-flier Cisco Systems, Inc. last week announced plans to acquire Token Ring switch innovator Nashoba Networks, Inc. in a stock swap worth about $100 million.

The installed base of Token Ring users — and analysts who track the market — had been critical of vendors' approach to Token Ring switching. Many vendors simply resold switches from OEMs.

"Few vendors had been investing real money in the technology," said Eric Hindin, a senior program manager at The Yankee Group, a consulting and research firm in Boston. "It seems almost everyone is [relying on] just a few vendors [as OEMs]."

Cisco has been reselling a switch from Token Ring switching pioneer Madge Networks, Inc., while Andrew Corp., UB Networks, Inc. and others resell IBM's switch. Cabletron Systems, Inc. resells Nashoba switches.

Users have openly questioned the future of Token Ring technology. Many have opted instead for cheaper and more mature Ethernet switching technology for new installations.

But that will change with Cisco's planned acquisition of Nashoba, which could be approved by shareholders by mid-September.

Token Ring switches enable information systems managers to substantially boost network performance by breaking up huge shared Token Ring LANs into much smaller networks, while in many cases running dedicated pipes to the desktop.

Welcome Cisco

One Token Ring user said she is excited about the planned Cisco/Nashoba deal.

"It's very encouraging to have a vendor with Cisco's market presence invest heavily in Token Ring switching," said Maralyn Rosenblatt, vice president of client services at Countrywide Home Loans, a large Token Ring shop in Simi Valley, Calif. "It's great in that ... they're rounding out their product line."

She also gave Cisco's acquisition strategy high marks. "They look at their product lines to determine what they don't have and make strategic moves to get what they need," she said.

But an Ethernet user sees things differently.

"The only reason Cisco did this deal was for market expansion, not necessarily because they believe in Token Ring switching technology," said Steve Lopez, a network manager at the the National Board of Medical Examiners in Philadelphia, a 3Com Corp. Ethernet shop. "The only reason this technology is getting attention is because IBM is propping it up."

Steve Lopez of the National Board of Medical Examiners: *'The only reason this technology is getting attention is because IBM is propping it up'*

Nonetheless, the desktop Token Ring switch market, which last year posted sales of $55 million, will soar to $1.373 billion in 1998, according to Dell'Oro Group, a research firm in Menlo Park, Calif.

Nashoba's Concord backbone switch will become a member of Cisco's Catalyst switching line. It will be renamed the Catalyst 1800.

Randall Campbell, product line manager for Token Ring switching at Cisco, said users will be able to manage the Nashoba switch from a new version of the CiscoView network management offering that will ship in the next several months.

Cisco officials said the firm will add Remote Monitoring technology to the switch. Campbell said Cisco will honor Nashoba's reseller contract with Cabletron.

Netsys assists network consolidation

CONTINUED FROM PAGE 53

to the routed network, one way or another," by providing the capability to test what-if scenarios, said Dan Sevier, information services technical analyst at Sprint Corp. in Westwood, Kan.

"We have a small window for making changes, so if we run into problems with a new configuration, we must back out and try again on another weekend," Sevier said. "This lets us do the testing prior to implementation."

> **"Trial-and-error testing is not a pretty sight on a production network."**
>
> — VINCENT MILLER, WASHINGTON MUTUAL BANK

That's the attraction of Netsys software for Dan Tulledge, senior performance engineer at the Tempe, Ariz., management center for the systems and networks that run throughout AlliedSignal, Inc. in Morristown, N.J.

Tulledge maintains more than 250 Cisco Systems, Inc. routers. He said CiscoWorks alone can't keep up with wide-scale configuration changes.

"Netsys software and our custom scripts fetch data from Cisco's router configuration archive so we can compare the files and report differences," he said.

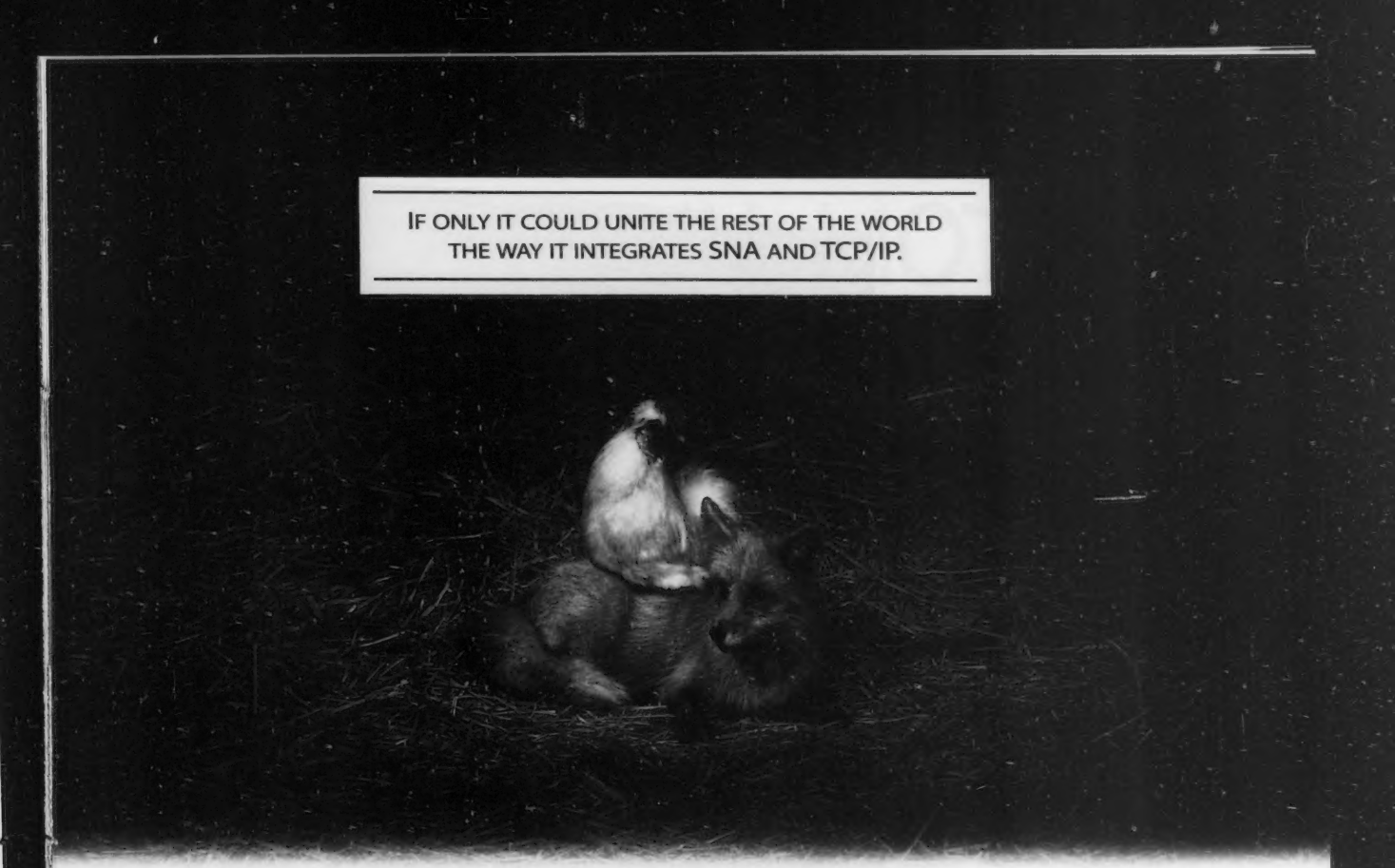
This low-level understanding of router configurations makes Netsys Enterprise/Solver unique, and managers need such intimate analysis and modeling assistance during network consolidation, said Val Sribar, senior research analyst at Meta Group, Inc. in Westport, Conn. "Making sense of many sophisticated settings on hundreds of routers — especially when dealing with time-sensitive SNA traffic — is brutal," he said.

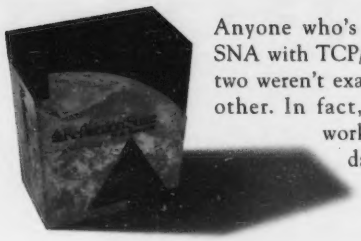
Netsys supports the modeling and troubleshooting of Cisco routers only, but a version should be ready next month for models from Bay Networks, Inc.

Connectivity Tools Release 2.0 lets the Enterprise/Solver router analysis software support Source-Route Bridging, Remote Source-Route Bridging and Data Link Switching+ protocols.

The software is available now. It costs $10,000 for networks with 25 routers and $65,000 for networks with 1,000 routers.

IF ONLY IT COULD UNITE THE REST OF THE WORLD
THE WAY IT INTEGRATES SNA AND TCP/IP.





Anyone who's tried to combine SNA with TCP/IP can tell you the two weren't exactly made for each other. In fact, getting them to work together can be a daunting challenge.

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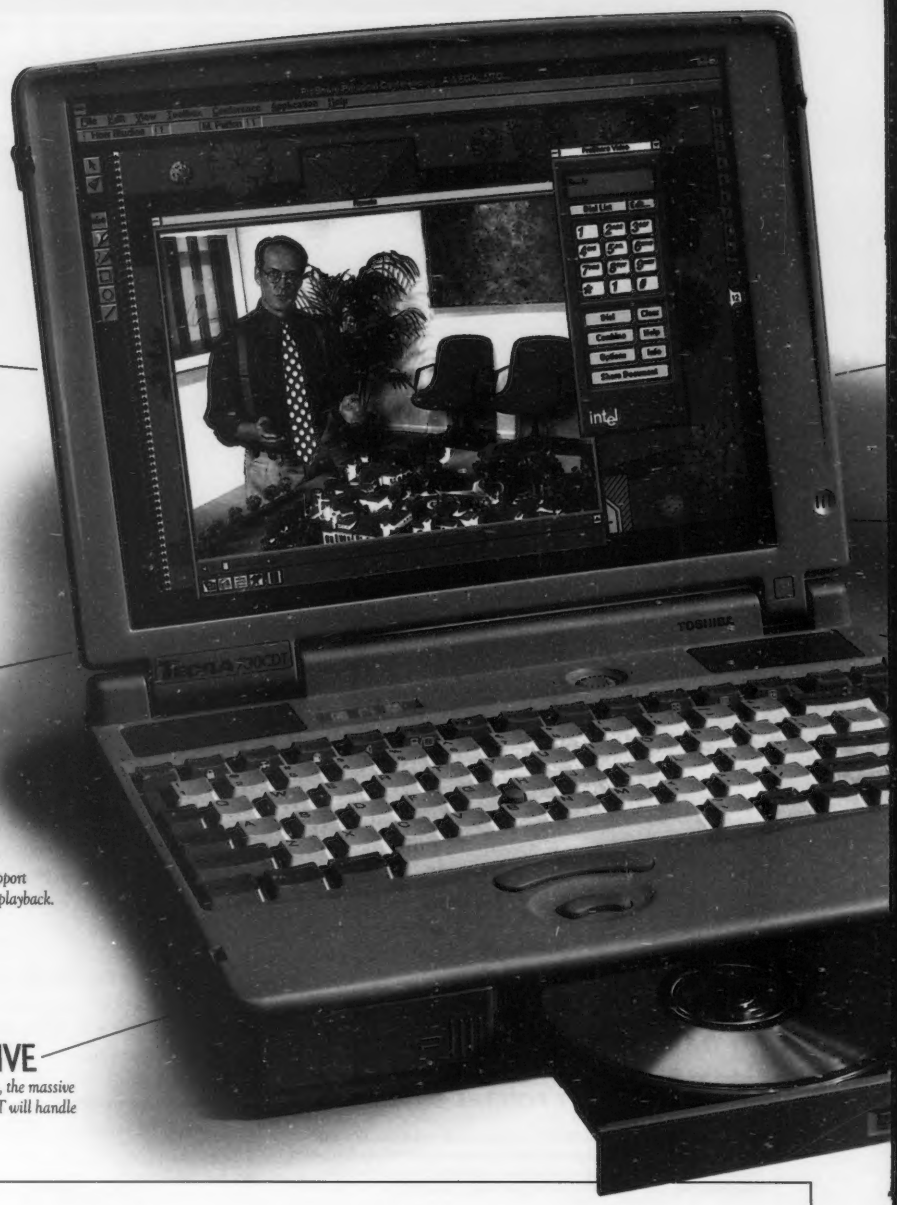

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With over two gigabytes of space, the massive hard drive in the Tecra 730CDT will handle all of your storage needs.

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New Products

U.S. Robotics Access Corp. has introduced NetStarter Auto Configuration Wizard, an addition to its Total Control NetServer/8 and Total Control NetServer/16 remote access servers.

According to the Skokie, Ill., company, NetStarter Auto Configuration Wizard is a Windows-based auto-configuration tool that simplifies the installation of the two remote access servers.

It lets users set up servers for applications that include telecommuter or remote access, LAN-to-LAN routing and dedicated host access.

NetStarter Auto Configuration Wizard is included in the Total Control remote access servers.

Pricing for NetServer/8 starts at $4,495. Pricing for NetServer/16 starts at $8,495.

▶ *U.S. Robotics Access*
(847) 982-5001
www.usr.com

Computer Knacks, Inc. has introduced Habitat 3.0 for Novell Directory Services (NDS).

According to the Shrewsbury, N.J., company, Habitat 3.0 is a Windows menu system designed to reduce the cost of supporting Windows and enhance productivity on Novell, Inc.'s NDS networks through centralized administration and security.

It has a central console that lets administrators maintain a standard Windows desktop for each container and group object in an NDS tree. Administrators can view and edit any user's desktop by selecting the user's name from a pop-up list.

Habitat 3.0 was designed to increase the stability of a network by preventing Windows users from altering the standardized portions of their desktops.

Administrators can also restrict users from adding icons or launching unauthorized applications. The Habitat desktop gives users access to their personal Windows environment from any network workstation.

Pricing for Habitat 3.0 starts at $395 for a 25-user license.

▶ *Computer Knacks*
(908) 530-0262

CMS Enhancements, Inc. has introduced the Eclipse CD Tower Server, a CD-ROM server tower for network support.

According to the Anaheim, Calif., company, the Eclipse CD Tower Server is a direct network-attach server that features seven quad-speed CD-ROM drives.

CMS Enhancements' *Eclipse CD Tower Server features seven quad-speed CD-ROM drives*

It can support multiple network environments and was designed to provide instant access to 4.4G bytes of data.

The Eclipse CD Tower Server supports Novell, Inc.'s NetWare 3.11, 3.12 and 4.10; Microsoft Corp.'s Windows for Workgroups, Windows 95, Windows NT and LAN Manager 1.3 and later; and IBM's LAN Server 1.3 and later. Unix, Ethernet and Token Ring direct attachments are available.

Pricing starts at $2,995.

▶ *CMS Enhancements*
(714) 517-0915

PC Guardian has introduced Encryption Plus for Windows 95.

According to the San Rafael, Calif., company, Encryption Plus for Windows 95 is data protection software that safeguards sensitive business information from unauthorized access, theft or loss. It was designed to encrypt and decrypt information as it is moved from a computer's hard disk to memory.

Encryption Plus includes features for centralized management and assignment of encryption keys, simple user access via customizable passwords, secure recovery from lost passwords and safe installation.

It occupies less than 4K bytes of resident RAM. It costs $100 for single-user copies.

▶ *PC Guardian*
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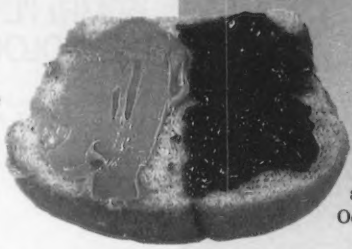
Can you imagine peanut butter vs. jelly?



A lot of pairings are special because the results demonstrate synergy — the whole being greater than the sum of its parts.

Like Torville and Dean... Siskel and Ebert... The Internet and the World Wide Web.

And UNIX System and Microsoft Windows NT technologies.

Despite reports of an "OS War," many users and vendors are succeeding with both UNIX and Windows NT. The facts: each is great for certain tasks and environments, and the two together often spell synergy and greater success, for vendors, software developers and IS users and managers.

That's why AIM Technology, a division of Network General Corporation, the most respected provider of independent performance benchmarks, now offers test suites for both UNIX System and Windows NT implementations. **That's why AIM's giving out both Windows NT and UNIX "Hot Iron" Awards at UNIX EXPO Plus** this October 8-10, in New York.

And that's why *Computerworld*, "the newspaper of information systems management," is sponsoring these awards, which will be presented by Bill Gates of Microsoft for Windows NT and Alok Mohan of SCO for UNIX.

Because great technologies don't become truly great until they come together — like Windows NT and UNIX will at UNIX EXPO Plus.

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Making the networked world more manageable

By Patrick Dryden

Two recent alliances will help vendors of internetworking gear add manageability to their products, which should reduce complexity as corporate networks grow, small businesses hook up and even consumer products gain connections.

Key component suppliers are combining Internet-spawned management protocols with real-time operating systems to help monitor and control just about anything that contains a microprocessor (see story at right). The results will appear next month at Networld/Interop '96 in Atlanta, vendors and analysts said.

Easing the process

With more embedded management, a central support staff could more easily check the familiar devices distributed throughout corporate networks, as well as new targets: office gear, consumer electronics and even cars. Less expertise will be required to maintain networks as devices get smarter and automated management becomes a reality.

"I hope this kind of integration can help vendors reduce the cost of [Remote Monitoring] probes and modules and build smarter, self-managing hubs and other devices," said a network engineer at a Wall Street financial firm, who asked to remain anonymous. "Then maybe we can have management modules dedicated to every port and node."

Networking vendors must make products easier to manage as they take them to new markets and "smaller and smaller sites, the ones that buy from catalogs and warehouse stores," said Tam Dell'Oro, principal at Dell'Oro Group, a consultancy in Menlo Park, Calif. "They can't tap in to these markets if the users have to struggle to make networks work. So product developers must depend on the microprocessor guys to build in manageability."

For years, vendors have supplied Simple Network Management Protocol functions that could report basic device status data to their own consoles and to enterprise network management platforms.

More recently, they began to add Remote Monitoring support, which requires local horsepower — a microprocessor and memory — to analyze the protocols, performance and traffic at checkpoints across the network.

Many organizations need the native instrumentation supplied by an embedded real-time operating system to handle management protocols, said Lou Steinberg, president of NetOps Corp., a network consultancy in New Fairfield, Conn. Such smart devices can collect data and forward only the important alerts or status information to central management applications.

That step reduces a "mind-boggling" amount of polling activity and monitoring effort in networks that grow beyond a few hundred routers and hubs to reach "tens of thousands of cable TV modems or hundreds of thousands of home utility interfaces," Steinberg said.

Reaching out

Standard management protocols are embedded in devices beyond the typical internetworking gear. Future service technicians could remotely monitor, troubleshoot and reconfigure devices such as these from a Web browser:

- A built-in modem and management module can connect fancy office equipment to a service network.
- A management module can handle billing and customer-support functions in consumer electronics such as set-top boxes, cable TV modems and satellite subscription interfaces.
- MiniLANs link automotive microprocessors now; the next step will be remote diagnosis via a car's cellular phone.

Embedded enablers

Traditional network products and new mass markets can gain manageability via tool kits coming from the following recent vendor alignments:

Integrated Systems, Inc. (ISI) in Sunnyvale, Calif., acquired **Epilogue Technology Corp.** in Albuquerque, N.M., via a stock swap valued at $21 million.

ISI will merge its real-time, embedded programming technology with Epilogue's management software. Company officials claimed 300 networking vendors have licensed the software for more than 2 million devices.

Lynx Real-Time Systems, Inc., a San Jose, Calif., supplier of real-time operating systems and development tools for communications products, launched a division dedicated to Internet implementations and associated help tools.

Microprocessor vendor **Texas Instruments, Inc.** in Dallas is embedding management protocols in its ThunderLAN chip set, which supports Ethernet, 100Base-T and 100VG-AnyLAN topologies.

One of TI's major customers is **Compaq Computer Corp.**, which builds this flexible network interface in to its hardware.

— Patrick Dryden

Has Pathworks been bypassed?

By Jaikumar Vijayan

Digital Equipment Corp. recently announced the release of Pathworks 6.0, which provides Windows NT networking services for Digital Unix.

The product lets users tie Windows NT-based clients and servers in to a Digital Unix enterprise network to share information, large systems resources and network services across an entire organization.

The product is best known for providing file and print services from OpenVMS and Digital Unix, analysts said.

More options today

Although the Windows NT announcement is a significant upgrade for the Pathworks product line, users have other options, said Jonathan Eunice, president of Illuminata, Inc. in Nashua, N.H.

"The need for something like this was more clear-cut about five years ago. It is kind of past the age where bigger systems provide the majority of access to PC clients," he said.

For instance, most of the connectivity offered by a product such as Pathworks already exists natively in operating systems such as Microsoft Corp.'s Windows NT and Novell, Inc.'s NetWare, Eunice pointed out.

But Pathworks 6.0 will appeal to Digital's VAX and Unix installed base, analysts said.

The product provides peer-to-peer server connectivity between Digital Unix and Windows NT.

Users, file sharing, printers and events can be managed from a Windows NT system.

The product costs from $990 for 10 users to $18,000 for 250 users.

Pathworks 6.0 for Unix (Advanced Server)

What it does: Provides Windows NT networking services on Digital Unix.

What that means: Windows-based PCs and servers can be tied more closely to a Digital Unix enterprise.

Clients supported: Windows NT, Windows 95, Windows for Workgroups and any other standard LAN manager client.

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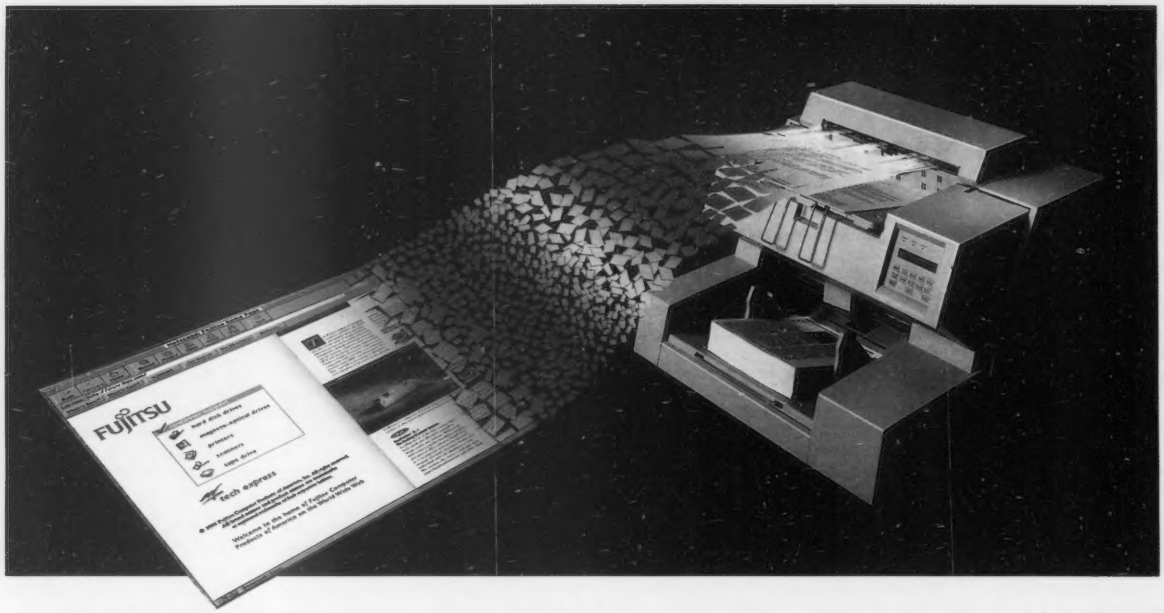

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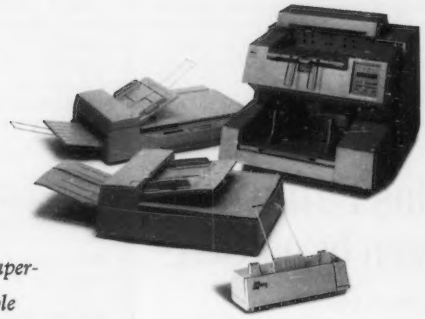

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Fat clients run across the 'net, **65**

The Internet

Travel service to target needs of businesses

By Mitch Wagner

Joining the ranks of consumer-oriented online travel services, American Express Co. and Microsoft Corp. plan next year to launch an Internet service tailored especially for business travelers.

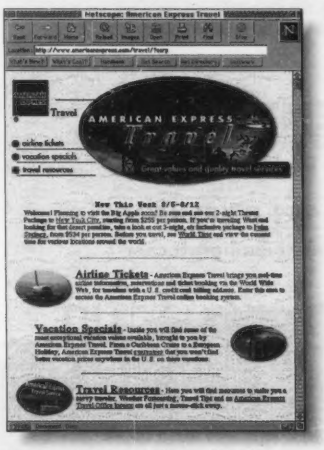
Like other online travel services, the offering will let users check the availability of airline flights, hotel rooms, rental cars and other travel needs. It will also let users book accommodations.

What makes the service cutting-edge is that corporate customers will be able to program the offering with their travel rules — preferred airlines, for instance, or spending ceilings. Employees using the service will be steered to choices that match the employers' travel policies. The interface will be customizable to give employers tight control over their employees' travel.

Moreover, the travel service will be delivered in two flavors: Travelers can access it over the public Internet, or American Express and Microsoft will supply a Windows NT Server that will run behind the firewall on a company's intranet.

American Express and Microsoft plan to launch their travel service by June 1997; it will go into beta testing by year's end.

Nancy Lee, who helps run Greyhound Lines, Inc. World Wide Web site, said corporate travelers would welcome an online travel service from a large company such as American Express. "It would consolidate information now available on a lot of different Web sites, and it would also help to standardize the technology out there," Lee said.



American Express and Microsoft's online travel service *will let businesses program the offering to suit corporate preferences for airlines or spending ceilings*

But many corporate travelers will be a hard sell, said analyst Carl Lehmann at Meta Group, Inc. Employees are used to having travel agents do it all for them and will resist having to make travel arrangements for themselves, he said.

"The last thing I want to do is figure that stuff out," Lehmann said. "We pay a travel agent to do that. I just want to pick up a phone, leave a voice mail — and that's the last I want to hear about it until an itinerary lands on my desk."

American Express launched its first Web site last November. The site, www.americanexpress.com, features online credit applications, travel information and online ticket sales. American Express has also run a site on America Online, Inc. since last year,

Online travel service, *page 65*

CW Internaut

Profile: Terry Swack

Terry Swack started a little graphic design firm in 1985 to create brochures and other small projects for businesses. Who knew she would run one of the more popular World Wide Web consulting companies in New England 11 years later?

Not Swack.

"Internet? What artist or designer would bother with an ugly, geeky, character-based network like that a decade ago?" she asked.

But the World Wide Web, now you're talking.

In 1994, just a few months after the original Mosaic browser was released by a collegiate Marc Andreessen, Swack started to crawl around on the Web.

The poor graphics drew her in right away. "It looked like a place that really needed some good design," she said. And Hypertext Markup Language was easy enough to use without formal training.

Even today, Swack's company employs no software engineers. Instead, her graphic artists and Web programmers work with developers at user sites to build external and internal Web applications.

"The only good Web sites are those built by teams, and our team can't possibly know your internal systems as well as you do," she explained.

The tactic went over well recently at Fidelity Investments, Inc. in Boston, where 12 to 15 "webheads" from Swack's company and Fidelity created external and internal Web sites.

One of the biggest intranet applications Swack helped design was a giant electronic library of policy manuals for the financial firm. The project didn't start out as an intranet at all. It started as a project to move the documents, mainly stored on mainframes, to a Unix system that would every two weeks distribute them to 200 offices worldwide.

Swack, who is vice president of the Webmasters Guild professional group, said she doesn't want to see any formal certification or licensing of webmasters.

Unlike architects or physicians, for whom a lack of certified expertise can mean serious consequences for clients, "no one ever died from a poorly built Web site," she said. — *Kim S. Nash*

President

Terry Swack Design Associates, Inc.

Boston

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"We looked at a number of development environments, but only Centura offered us an easy-to-use solution with enough power and flexibility to develop all the functions we wanted within the application."

— Peter Athan, Manager,
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Featuring powerful tools for rapid application development, team programming, connectivity, and remote deployment, Centura's products enabled Mercedes-Benz Credit Corporation to create a complex application that integrates corporate mainframe data and runs on PCs at more than 200 dealerships across the U.S. Of course, the important thing to the dealers is that the application gives them instant access to the information they need to stay competitive — and sell cars faster than ever before.

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Fat clients on the 'net

By Frank Hayes

Applications that link businesses across the Internet use Java applets, World Wide Web browsers and hot new Internet-based tools — right?

That's what some vendors and pundits insist is the future of Internet-based client/server applications. But not everyone buys that pitch. And competition is heating up between developers using newfangled approaches such as the Web and Sun Microsystems, Inc.'s Java language vs. more traditional client/server tools.

"If you have the business problem we're facing, can you solve it using a Java applet running off the server? The answer is no — that stuff just isn't quite there yet," said Greg Colbert, vice president of operations at Realty Highway, Inc. in Honolulu.

Colbert's company, which is owned by Title Guaranty of Hawaii, Inc. in Honolulu, has developed an application that uses the Internet to link the businesses involved in a real estate sale, including real estate agents, attorneys, mortgage lenders, home inspectors and title and escrow firms.

The system, which is being tested, should cut in half the time required to process real estate paperwork, Colbert said. But instead of using Java and the Web — which weren't widely available when the project was launched two years ago — it uses "fat" client programs written in Microsoft Corp.'s Visual Basic, which communicate with a SQL Server database.

The familiar tools let developers use established libraries and well-understood client/server development techniques. "We're really using the Internet as an extension of a LAN but between businesses," Colbert said.

Realty Highway's Greg Colbert: *'We're using the Internet as an extension of a LAN but between businesses'*

But that conservative approach misses some key advantages of the 'net, said Tom Boos, vice president of information technology at the Coris division of R. R. Donnelley & Sons Co. in Chicago.

Donnelley is developing its own Java-based business-to-business Internet application that lets customers send printing jobs and check proofs across the 'net. "Anybody with a Java-enabled Web browser can send content to Donnelley and check status with one mouse click," Boos said.

That means businesses using the system can choose Macintoshes, Unix workstations or even Web terminals to work from, unlike the Realty Highway application, which requires a PC to run Visual Basic.

And customers download the latest version of Donnelley's Java applet each time they connect. Realty Highway's developers had to include in their application a rule to check the client program's version when it logs in to the server and update it if necessary — though only the updated modules will be downloaded, Colbert said.

Fat or thin?

Fat client	Thin client
+ Uses common tools such as Visual Basic or Powersoft's PowerBuilder	− Requires new development tools supporting HTML* or Java
− Requires specific platform support by tool vendors	+ Runs on any platform with a Web browser supporting Java
− Requires special coding to support updating of code	+ Always uses the freshest code
+ Gives users greater control over security	− Security standards still evolving

*Hypertext Markup Language

Online travel service

CONTINUED FROM PAGE 63

where consumers can check their charge-card statements and pay off balances.

Other online travel services, which allow customers to purchase tickets, target consumers. They include Travelocity (www.travelocity.com/) from Worldview Systems Corp. and AMR Corp., the parent company of American Airlines; the Internet Travel Network (www.itn.com); and a consumer-oriented site from American Express (www.americanexpress.com/travel). Additionally, AMR and United Air Lines each offers proprietary online travel services.

American Express' previous Internet ventures have used technology from Netscape Communications Corp. But to launch a business-travel service on the Internet, American Express turned to Microsoft as a business partner.

The reason was simple: Although American Express is happy with Netscape servers' performance in running its 9-month-old, consumer-oriented site on the Web, the company's new service will target Fortune 1,000 companies. And American Express wanted to leverage Microsoft's experience in writing applications for big business.

"We're a huge company with a lot of different needs," said Dave Bauman, senior vice president of interactive services at American Express in New York. "It's not unusual for us to work with a lot of different suppliers in the company.

A new trend?

American Express' decision could be a forerunner of a trend in corporate America, as Microsoft steadily narrows Netscape's head start in winning the hearts, minds and wallets of corporate information systems managers.

A recent *Computerworld* poll asked IS managers where they expected to be buying most of their Internet software; about the same number said Microsoft as Netscape. Just three months earlier, Netscape loyalists outnumbered Microsoft by more than 2 to 1.

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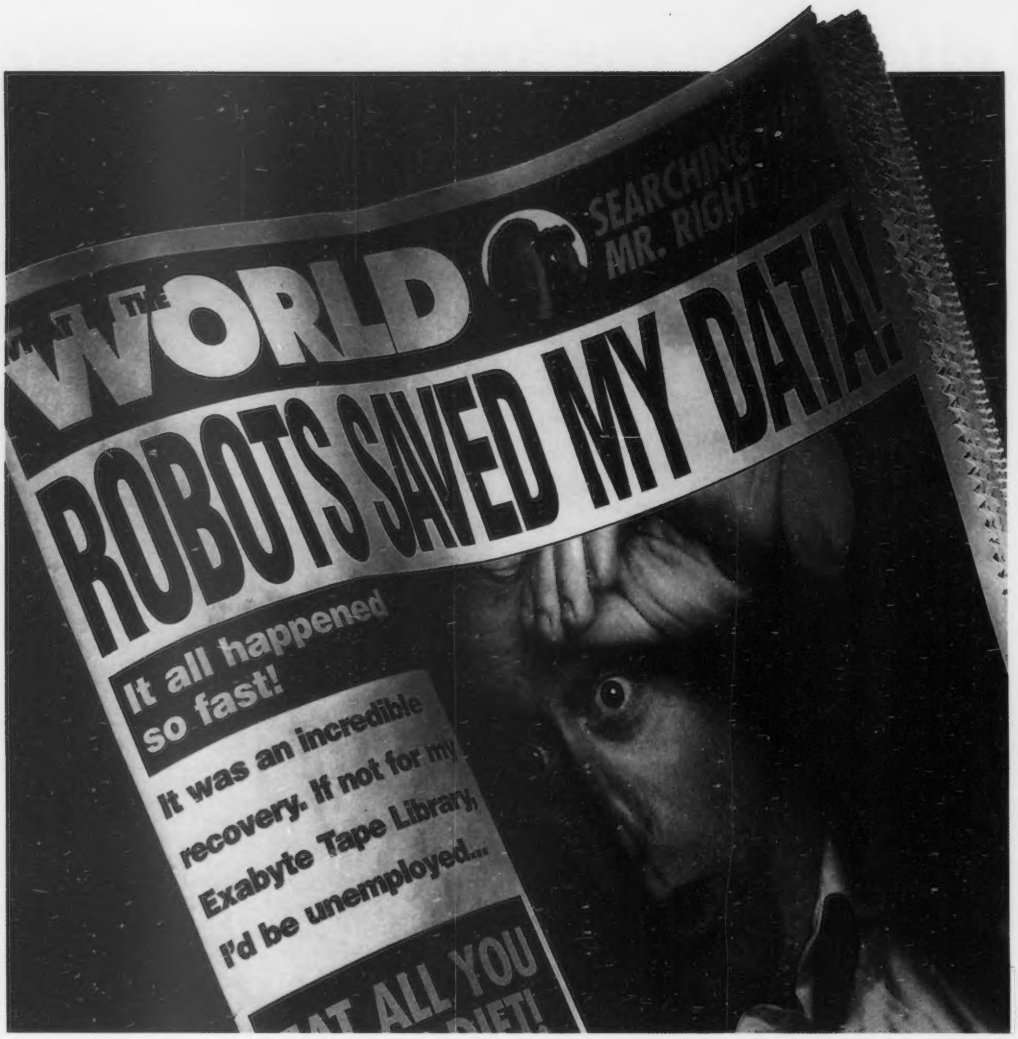

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IBI's report-writer focuses on the Web

By Mitch Wagner

Information Builders, Inc. (IBI) has introduced WebFocus, a tool designed to let database administrators replace proprietary IBI front ends for displaying reports and instead show those reports on the World Wide Web.

Database technology

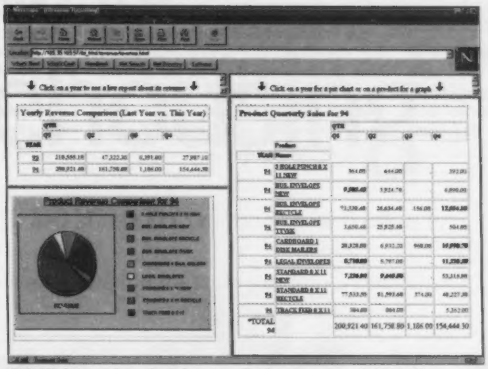
Users can display charts and graphs and show the results of predefined queries using any standard Web browser. The fourth-generation language (4GL) programs are fully compatible with IBI's client/server reporting system.

Promising product

"The product has a lot of potential, especially for users [who] have a heavy investment in Focus already," said user Don Grinstead, manager of systems management at Indiana University in Bloomington. "For anybody that's already knowledgeable about Focus, they'll find they're just assembling their queries on the Web."

The software uses a multitier architecture that performs the following steps:

- The user requests a report through a browser.
- User requests are passed through a standard Web server to IBI's WebFocus Common Gateway Interface (CGI) module, which runs on the same server.
- The WebFocus CGI module uses standard CGI scripts to pass the query to IBI's WebFocus server, which can reside on the Web server, on the database server or on its own system.
- The WebFocus server, in turn, passes the query to the enterprise databases and returns the information.



IBI's WebFocus *lets administrators display reports on the Web. Users can display charts and graphs and show the results of queries using any standard Web browser.*

Michael Goulde, an analyst at Patricia Seybold Group in Boston, said the WebFocus software is unique in that it aims to be a complete report-writer — and nothing but a report-writer. Other software packages, including those from Applix, Inc. and Next Software, Inc., aim to offer complete client/server functionality on the Web.

IBI is one of the leading developers of 4GLs. A 4GL isn't just a language, it is a software development tool set designed to help users create complex data queries and build client/server applications around databases.

Other 4GL vendors are also working to make their back ends Web-accessible, either by generating results in Hypertext Markup Language (HTML), the formatting language used on the Web, or by creating clients based on the Java programming language. Other 4GL vendors include Visix Software, Inc., Neuron Data, Inc., Microsoft Corp., Borland International, Inc. and Powersoft Corp.

WebFocus works with most common databases, including IBM's DB2 and products from Oracle Corp., Informix Corp., Sybase, Inc. and Microsoft.

Pricing ranges from $6,500 for a Windows NT-based server to $105,000 for mainframes and high-end Unix systems. Server software for NT and Sun Microsystems, Inc.'s Solaris will be available at the end of the month. In late September or early October, IBI will ship software for Hewlett-Packard Co. and IBM Unix systems as well as IBM AIX mainframes.

The package represents a trade-off for users.

It gives them flexible functionality but locks them into the IBI 4GL. "That debate has been raging for as long as there've been 4GLs," Goulde said. "Pick a 4GL, and you're ipso facto locked in. If you generate the reports in HTML, you're not locked in, but you get less functionality."

Briefs

Firewall bundle

NetManage, Inc. in Cupertino, Calif., plans to bundle **NEC Technologies, Inc.**'s SocksPlus security firewall with an upgrade of its Chameleon IntraNet Desktop server software due out this year.

PowerBuilder Web tools begin free beta versions

Sybase, Inc.'s Powersoft Corp. division is allowing users to download free beta versions of its web.pb and PowerBuilder Window plug-in, which together let PowerBuilder applications run across the World Wide Web. Users can download test versions of the software from the Web site at www.powersoft.com/products/devtools/pb50/ibetanew.html. Final versions of both products are slated to ship by October.

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Online audio finds its voice

By Mitch Wagner

As audio on the Internet moves from cutting-edge technology to the mainstream, more vendors are jumping in. Macromedia, Inc. recently launched technology for delivering high-quality sound online with low overhead.

San Francisco-based Macromedia is adding "streaming audio" to its popular Shockwave multimedia tool set for the Internet. The feature was designed to allow World Wide Web authors to add sound to their sites. Visitors click on the appropriate spot on a page, and the sound starts playing.

"It will add streaming audio for very little cost and for very little effort in the production process," said user Dennis Backus, technical product manager for CNN Interactive (www.cnn.com/) at Turner Broadcasting System, Inc.

The technology will be useful for news, entertainment and other consumer-oriented sites — especially those selling music — on the Web, Macromedia officials said.

The streaming audio will also be useful on corporate intranets, especially for training purposes, Macromedia officials said. For example, in customer service training, an employee can participate in role-playing scenarios over the computer.

Audio can be a valuable tool in information systems managers' quest to help create Web sites that attract consumers. It can help a Web site make itself heard above the din of hundreds of thousands of sites vying for consumer mind share, said Leslie Howard, vice president of product development at K2 Design, Inc. in New York.

The Macromedia technology is a nearly head-to-head competitor with the existing standard for real-time audio on the Internet, RealAudio from Progressive Networks in Seattle. Macromedia, which has a development relationship with RealAudio, is attempting to position its product as complementary.

Is it live or Macromedia?

Macromedia said Progressive's technology is useful for live sound on the Web, whereas Macromedia's technology can be used only for recorded sound. But, in fact, the overwhelming majority of the RealAudio servers used on the Web play recorded sound.

Progressive Networks claimed that 5.9 million RealAudio plug-ins have been downloaded from its Web site. The software is used on many popular Web sites, including HotWired, CNET: The Computer Network and ESPNet SportsZone. It is also used in intranet applications at Charles Schwab & Co. and elsewhere. Macromedia said 4.5 million Shockwave plug-ins have been downloaded from its site.

On the client side, the two technologies are pretty equivalent, although they differ in requirements for systems needed to create and run the sound files. For example, it is possible to create the sound files for Macromedia only by using the software package SoundEdit Plus Deck II, which runs only on the Macintosh. The software is priced at $399 separately or is available for $999 as part of the company's multimedia authoring package, Director Multimedia Studio 2.

Progressive Networks needs a specialized server to store sound files. A server that supports five simultaneous sessions costs $495, and a version that supports 20 sessions costs $1,895. The server runs on common Unix variants, Windows NT and Apple Computer, Inc.'s Power Macintosh.

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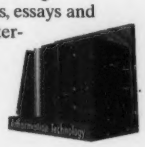

THE COMMERCE BUILDING

The Commerce Building
A look at various sites that offer electronic commerce.

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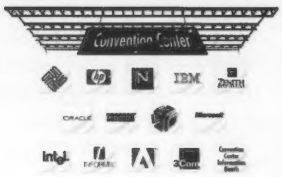
Technology stock activity, including in-depth analysis of trends and stars.



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Internet · tools

Aspect's Web tool makes call center connection, 72

Corporate Strategies

Physician, link thyself

Health field finds uses for wireless technology

By Mindy Blodgett

The physician walks into the examining room and quickly enters the patient's name and other vital information into a handheld, pen-based computer. By connecting to the wireless LAN installed in the medical facility, he immediately has access to all the lab tests and notes taken on this patient.

After the exam, he enters orders and sends that information to a nearby printer. The patient then receives a printout with explicit instructions about prescriptions and diet.

This is how things work at the Santa Cruz Medical Clinic, where a yearlong pilot program using wireless technologies has yielded time and cost savings and has reduced paper use, according to Cathy Coyle, director of information services.

The Santa Cruz project is part of a wider, growing trend in the health care industry to use wireless technologies in hospitals and clinics, according to industry analysts.

"The trucking and warehouse industries have been early and big users of

Physicians, *page 72*

Medical facilities *increasingly use wireless technology for communications and logging in diagnoses and patient information*

Outsourcing standard mulled

By Thomas Hoffman

A consultancy and a group of customers — including American Express Co. and L. L. Bean, Inc. — have developed a standard that would require outsourcing vendors to use the same benchmarks to measure their quality and service levels.

Using criteria established for the Malcolm Baldrige National Quality Award as the foundation for the standard, COPC-2000 was designed to ensure that vendors achieve high levels of productivity and customer satisfaction. The standard will measure the satisfaction of the vendors' customers and, in turn, that of their customers' clients and end users.

Spearheaded by Williamsville, N.Y.-based Customer Outsourcing Performance Center, Inc. (COPC), the standard is being used by Novell, Inc., Compaq Computer Corp. and Microsoft Corp. Those vendors outsource some of their internal functions, such as product and sales support.

COPC's Alton Martin: *His group plans to offer training to auditors*

Free for all

COPC plans to provide the standard free to user companies in the financial services and health care industries — the users most involved with outsourcing services — by next spring, said Alton Martin, executive vice president for the consultancy. The standard will also be available for free on the World Wide Web by late September.

Prospective users of the standard see it as a positive step because service vendors use different metrics to track their performance in

Outsourcing, *page 72*

How to build a team with basic instinct

By Julia King

The Phoenix Suns used it to put together a winning professional basketball team.

Authorities in South Africa used it to revamp that country's notorious police force.

Now, an increasing number of Fortune 500 firms are using it to bring enterprise software projects in on time and on budget.

It is the Kolbe Conative Index, a 36-item test designed to measure a person's innate strengths and talents, rather than his preferences or aptitude for a particular task. The test can be administered by PC or via paper and pencil.

Question No. 3 asks: *"If I were told to hurry finishing a project, I would:*

A. Skip to the bottom line.
B. Decide what could be done properly.
C. Work diligently until time was up.
D. Consider craftsmanship most important.

The real you

"What we're measuring is a person's striving instincts," said Kathy Kolbe, designer of the test and CEO of Kolbe Corp. in Phoenix. These instincts indicate how people would perform naturally — without the benefit of directions or training — if free to completely be themselves.

Armed with this information, Kolbe said consultants can predict how different people will interact on a team and how the team will perform as a whole.

On software projects, in particular, "we can identify who is going to respond to change in which way, who will be resistant and who will be able to integrate new systems into existing structures," she said.

The total Kolbe package — including training, brochures and videotapes — costs about $40,000 for a project with 100 people. Kolbe offers a money-back guarantee.

During the past several years, more than 500 companies, including Xerox Corp. and Honeywell, Inc., have employed the Kolbe Index. Information systems managers say this kind of information is invaluable because software implementations typically get hung up by people issues rather than technical problems.

Consider the case at Eastman Chemical Co. in Kingsport, Tenn., which has given the Kolbe test to everyone in its IS unit. Eastman also used Kolbe results to form its SAP R/2 project team in 1992.

Personality traits

Managers say the ideal software implementation team consists of people with a mix of "striving instincts" as defined by the Kolbe index. These include the following:

Fact finders
Able to probe users to ascertain their exact system requirements.

Follow thrus
Natural planners and schedulers – ideal developers and managers of project plans.

Implementers, or hands-on people
Ones who easily grasp mechanical issues and make excellent hardware and platform experts.

Quick starts
The innovators and entrepreneurs of a team. These people are excellent at selling a project to upper management. But because they also are risk-takers, they are prone to promising more than a system can deliver.

Early in the project, "we had two managers who had very different instincts. And the first couple of times they went off to work together, they came back yelling and screaming, and they didn't want to work together again," recalled Bob Dorsey, associate director of systems and computer services.

Checking their Kolbe results, it was no wonder, he said. One was what Kolbe calls a "fact finder," the other was a "quick start." The solution, Dorsey said, was to add a "bridge person" — someone who could accommodate both managers' natural operating modes.

Such maneuvering helped keep the project on course, Dorsey said.

"Other companies implementing SAP were running over schedule by three and four times," he said. "We were within two months of our original time schedule."

Web tools make call center connection

Enable customer-to-vendor communication

By Kim Girard

Businesses are slowly linking their call centers to the World Wide Web — using Internet-enabled applications to process orders, answer questions and generate inventory reports.

Call centers are where companies handle large numbers of incoming or outgoing calls. An increasing number of vendors provide software to help manage this environment, including packages that support telephone, fax, electronic mail — and now, the Web.

Aspect Telecommunications Corp. in San Jose, Calif., with 500 customers, is the latest vendor to Web-enable its call center system, Agility 2.0. The Aspect Interactive Web software lets users communicate with an Agility call center via a Web browser that is compatible with standard Mosaic 2.0.

Existing Agility customers must upgrade to Version 2.0 to get the Web features, the firm said.

With Interactive Web, historical data about a customer's account can be used to create tailor-made Web pages. Aspect's system can notify customers of key news, such as fluctuations in stock prices. Using the system, a company could also provide clients with up-to-the-minute, Internet-based reports that detail order status and daily call volumes.

Internet tools

Starting a dialogue

Roger Bracewell, interactive director at Brann Ltd., a marketing communications firm in Gloucestershire, England, plans to upgrade to Agility 2.0 to connect the company's call center to the Web.

"We're moving away from information publishing — just presenting facts and figures — to doing more customer dialogue," Bracewell said. By using the Web, the company is trying "to give people a choice about how they make contact with us and go through the buying process."

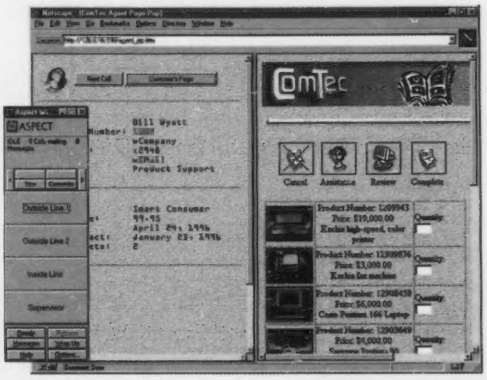
For example, a banking customer may initially make a call to the company and then choose to access the Web for more information, he said. The user could click on a "call me" button on the Web site to request that a Brann agent call back, he said. That "call me" button is a standard feature of Aspect's software.

Other firms that provide similar Web-enabled applications include Northern Telecom in Ontario, Rockwell Telecommunications in Downers Grove, Ill., Siemens Rolm Communications Corp. in New York and Lucent Technologies, Inc. in Murray Hill, N.J.

"Almost all the vendors I deal with are Web-enabling their platforms," said Nancy Jamison, an analyst at Dataquest in San Jose. By 2000, some 40% of new interactive voice-response systems will be Web-enabled, she said.

Aspect Interactive supports data retrieval from Oracle Corp., Sybase, Inc., Informix Corp., Microsoft Corp.'s SQL server, Btrieve and Open Database Connectivity-compliant database systems. An Aspect Interactive Web license — which includes dynamic Web page creation, callback, automatic notification and back-end system connectivity — starts at $36,000. It will be available Aug. 19.

Agility 2.0 provides object-oriented development tools and includes interactive response capabilities over telephone, fax, electronic mail and pager. Pricing starts at $75,000.



Aspect Telecommunications' Aspect Interactive Web *allows users to communicate with an Agility call center*

Outsourcing

CONTINUED FROM PAGE 71

areas such as order processing and computer uptime. This makes it difficult for customers to make apples-to-apples comparisons when vendors respond to their requests for proposals (RFP).

USAA Information Services, the information technology arm of USAA Life Insurance Co. in San Antonio, recently sent out a comprehensive RFP for a new network backbone project. Even though the firm has had no problems with this particular RFP, "I think we could learn something and contribute something" to a standard such as COPC-2000, said Roger Boerner, vice president of life systems at USAA.

Standard needed

The standard also appeals to Household Credit Services, Inc., the fifth-largest bank card issuer in the U.S. "I think [the standard] is long overdue — we need to certify that our customers are getting the utmost possible service," said Don O'Neill, recovery/collections manager at the Salinas, Calif.-based firm.

But do outsourcing vendors really care whether a customer's end users or external customers are satisfied with their services? Vendors "are more concerned [about] the people who are paying the bills," said Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass.

That isn't the only skepticism surrounding COPC-2000. COPC isn't exactly a household name, and some vendors have questioned the standard's usefulness. Harte Hanks Response Management, for example, already hires KPMG Peat Marwick to audit its internal processes, including its computer operations. And Harte Hanks didn't see much need to pay COPC $75,000 to audit its three help desk and customer support centers.

"I'm not convinced that spending money with COPC to hang a plaque in our foyer will make a difference," said Gary Skidmore, president of the Austin, Texas-based unit of Harte Hanks Direct Marketing.

Nevertheless, COPC plans to push on. Martin said that by the second quarter of next year, his group will offer training to other outside auditors who want to become COPC-2000-certified.

Standard requirements

A consulting firm has created the COPC-2000 standard. Using criteria established for the Malcolm Baldrige National Quality Award, this standard was designed to provide outsourcing customers a benchmark for evaluating a vendor's performance in key areas, including:

- End-user satisfaction
- Maintaining, updating and upgrading hardware and software
- Productivity, cost and asset utilization

Source: Customer Outsourcing Performance Center, Inc., Williamsville, N.Y.

Physicians go wireless

CONTINUED FROM PAGE 71

wireless," said Craig Mathias, an analyst at Farpoint Group, Inc. in Ashland, Mass. "But the health care industry is starting to catch on as well. There have been lots of big tests at hospitals of this technology, though not many have signed on yet."

"But that is coming," Mathias said. "These are mission-critical applications and health professionals need to stay in touch all the time. And the health care industry is certainly interested in saving money, which this can potentially do for them."

Another burgeoning wireless application in the health care industry is for medical suppliers to use wireless communications for sales to hospitals and clinics.

Darlene Kelly, senior vice president and chief information officer at Physicians Sales and Services, Inc. in Jacksonville, Fla., said the sales staff uses the wireless radio network from RAM Mobile Data USA L.P. in Woodbridge, N.J. The nationwide sales staff uses pen-based systems from Compaq Computer Corp. to wirelessly transmit orders and check inventory.

Patients win

"It's made a lot of difference in savings on paper, and our customer service is much better," Kelly said. Airtime costs range from $25 to $40 per month per salesperson, she said.

Coyle said, "The project has worked really well" at the Santa Cruz clinic. The clinic plans to expand the program to all 80 physicians and nurses, with eventually about 145 people on the LAN. "We're doing a study right now, so we don't have numbers yet — but we definitely envision a cost-savings," she said.

The pilot was launched in the clinic's family practice and urgent care department. The clinic uses a wireless LAN and mobile communications network provided by Wise Medical Systems, Inc. in Los Gatos, Calif., according to Coyle. Proxim, Inc. in Mountain View, Calif., has a similar system available.

Take your medicine

MediTrac, Inc. in Southfield, Mich., this spring released DosePage, software that uses wireless technology over pagers to remind patients to take their medicine.

Coyle said she wanted to try the newer technologies partly because a few of the physicians were already using PCs to develop their own medical record systems. So Coyle said it was time for the information systems department to take control — before users got invested in their own solutions.

But at first, it wasn't easy to get all the physicians to sign on to the new system.

"Some of them said to me, 'I don't want to look stupid to the patient,'" Coyle said. "They didn't want to use the devices until they felt absolutely comfortable with them."

U.K. firms implement inexpensive intranets

By Niall McKay

Installing an intranet doesn't have to break the budget, some U.K. firms have found.

"A paradigm shift, yes," said John Wodehouse, advanced informatics and technical specialist at Glaxo Wellcome PLC. "But millions of dollars, no."

The installation of an intranet at Glaxo — the second-largest pharmaceutical company in the world — has been inexpensive and easy, according to Wodehouse.

"We did not really make a conscious decision to roll out a corporate intranet," Wodehouse said. "But we discovered that we had all the components in place. The only thing we needed was to buy some Web servers and address the security issue."

According to Kathy Burrows, U.K. research manager at International Data Corp. in London, most companies need only install World Wide Web server software and authoring tools. "They can experiment without investing a large amount of money," she said.

At Molins Engineering Machinery International Ltd., information technology director John Lashbrook found that to be true.

The company didn't even have to set aside a separate budget for its intranet installation. "It's quite amazing when you think that we are enabling the connection of so many sites and computer systems with so little money," he said.

"If we were to attempt this 10 years ago, it would have cost millions of dollars for the network connection alone," he added.

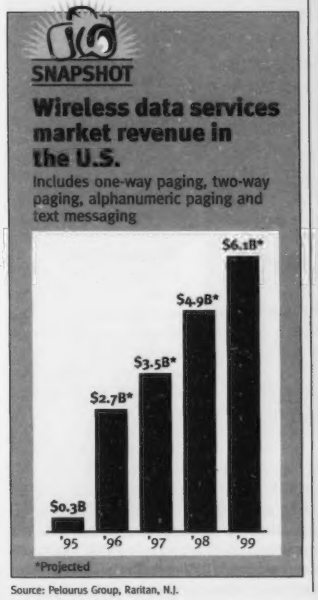
The key enabling factor for Molins, according to Lashbrook, is that the company had deployed corporatewide electronic mail several years ago. "We just used the existing network infrastructure, which was already TCP/IP," he said.

One benefit is that managers at Molins' Buckinghamshire, England, headquarters can view computer-aided design documents stored on systems in the company's design operation in Philadelphia. "We can use a [Virtual Reality Modeling Language] browser to view designs on the other side of the world," Lashbrook said.

For Glaxo, it is the simple information publishing applications, such as internal telephone directories and information regarding the company's many different departments, that drive the deployment.

"This is an evolution rather than a revolution," Wodehouse said. "But that does not mean that it will not completely change the way that we do business."

McKay writes for the IDG News Service in London.



Source: Pelourus Group, Raritan, N.J.

INTERACTIVE MULTIMEDIA PROFILE

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Name: Catherine Winchester

Company: Wanderlust Interactive Inc., New York, NY

Title: President and CEO

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Managing

SHARED SERVICES SHARED PAIN

Insourcing promises to offer the best of centralization and decentralization, but does it turn IS into a second-class citizen?

By Brian McWilliams

Over the years, many companies have spent a lot of energy ducking that swinging pendulum: whether 'tis better to centralize or decentralize information systems staff and management. Either way, it seems you get beaned, says Carl Williams, vice president of information technology at Amoco Corp.

"Centralizing IS gives you economies of scale, but customer responsiveness can suffer. Whereas distributing IS into the business units gives you a service orientation but also redundancy and poor integration," Williams says.

No wonder, then, that Chicago-based Amoco and a growing number of large organizations have turned to a new approach that promises the best of both worlds: shared internal services. Many variants of shared services — also known as insourcing — are used today. They were designed to capture the economies of scale of centralization and keep support functions focused out to business units, not up to the corporate level.

Independent groups

One popular model involves rolling IS and other staff functions, such as finance, human resources and law, into an independent business services group. The new unit is run as much as possible like a business. It's assured no budget, only whatever fees it charges internal customers for the unbundled services they're willing to buy. Instead of reporting to corporate executives, the new organization answers directly to the operating units. Many business services groups have their own president and even an internal board of directors, which is composed primarily of line executives.

At companies such as Amoco, Eastman Kodak Co., Monsanto Co., AlliedSignal, Inc. and Rhone Poulenc, shared services has provided a 20% to 40% sustained cost savings and garnered Lexus-like internal customer satisfaction ratings of more than 70%, according to Lee Forst, managing director at The Amherst Group. The Greenwich, Conn., consulting firm has worked with many early adopters.

But en route to those improvements, business services groups — and IS in particular — "face some serious disequilibrium," says James Bryant a partner at Arthur Andersen's shared services consulting practice in Chicago. Because shared services requires them to run their organizations like a business, "IS leaders need skills like entrepreneurialism and selling more than technical skills," he says.

Recognizing this, Tenneco Corp., the Greenwich, Conn., conglomerate, created its customer advocate program as part of its transition to shared services. Designated senior IS staffers serve as account executives, or liaisons, with large business unit customers. They are responsible primarily for marketing and communications. "It helps them to see us as business partners, not just transaction processors," says Jim Murphy, executive director of IT at Tenneco Business Services (TBS).

Under shared services, there's also a whole new set of metrics, says John Schaefer, director of shared services IT at Monsanto in St. Louis. Instead of worrying about traditional IS measures such as lines of code or CPU cycles, IS leaders must begin to think and talk in terms of "reliability, availability and unit costs," he says. Pressure is especially great to devise ways to drive down the price of each "unit" of service, whether it's providing an electronic-mail message, support call or software installation.

A lot of shared services' early cost savings come from achieving scale. When TBS took over the company's telecommunications services and consolidated them through one vendor, thereby earning lower rates, it reaped millions of dollars in annual savings.

No redundancy

But in the case of IS, scale also comes from merging data centers, application support groups and help desk operations — and eliminating redundant staff. Tenneco last year closed four mainframe shops and rolled all the work into its Newport News, Va., data center, which is run by TBS. Despite the new burdens, IS staffing in Newport News stayed "pretty level," Murphy says. Similarly, AlliedSignal's move to shared services last year allowed it to cut 130 people from its IS organization alone. Monsanto laid off approximately 10% of its IS staff when it created Monsanto IT Shared Services.

SHARED SERVICES vs. CENTRALIZATION

Does shared services sound like a fancy term for centralization? Supporters of shared services are quick to object. They point out these differences:

Shared services

- Outwardly oriented to business units
- Services separated by customer set
- Service providers can be embedded in business units and/or centralized
- Joint accountability for costs and service levels

Centralization

- Upwardly oriented to top corporate management
- Services standardized and bundled
- Service providers usually located at corporate headquarters
- Little accountability for costs and quality

Source: Lee Forst, The Amherst Group

Reading anyone?
A look at three books for IS managers — and what some IS folk are reading this summer. Page 76.

Sometimes shared services leaves IS' head count largely untouched but significantly redraws reporting lines. Amoco in 1994 reassigned the 1,200 IS professionals who had been embedded in its three business groups so that they reported to shared services, joining forces with the former central IT department staff of 600. Some firms relocate shared services groups to a new field location, but most of Amoco's reassigned IS staffers remained in place. But all had new management and internal customers.

By introducing concepts such as service-level agreements and compensation incentives linked to customer satisfaction, shared services forces IS staffers who suffer from a back-office mentality into a more customer-focused approach. As a result, Williams and other IS shared services leaders argue that they're better positioned to support strategic initiatives. "People are saying that without us, they couldn't do what they need to do to be competitive," he says.

But for some IS staffers and managers, being "owned" by the corporate center, rather than by a revenue-producing business unit, is a step backward in their quest to have IT regarded as strategic. "We had a lot of people who suddenly felt they were second-class citizens," Williams admits.

Although business units typically worry that shared services may hurt service levels as a rule, it is managers in shared services organizations, not their customers in business units, that stonewall the implementation, says Pat Leempete, a vice president in the Chicago office of A. T. Kearney, Inc., the management consulting business of Electronic Data Systems Corp. "There's a lot of foot-dragging. Sometimes all you can do is bring fresh people in," he says.

Because shared services is usually a high-profile, CEO-led corporate initiative, IS leaders are expected to find solutions fast or take the fall. One year into its implementation, Monsanto brought in a new chief information officer and replaced its shared services IT head with Schaefer. According to Forst at The Amherst Group, Monsanto kept IT Shared Services outside its Monsanto Business Services group because "IT was such a mess, it would have pulled down the shared services effort as a whole."

Structural problems

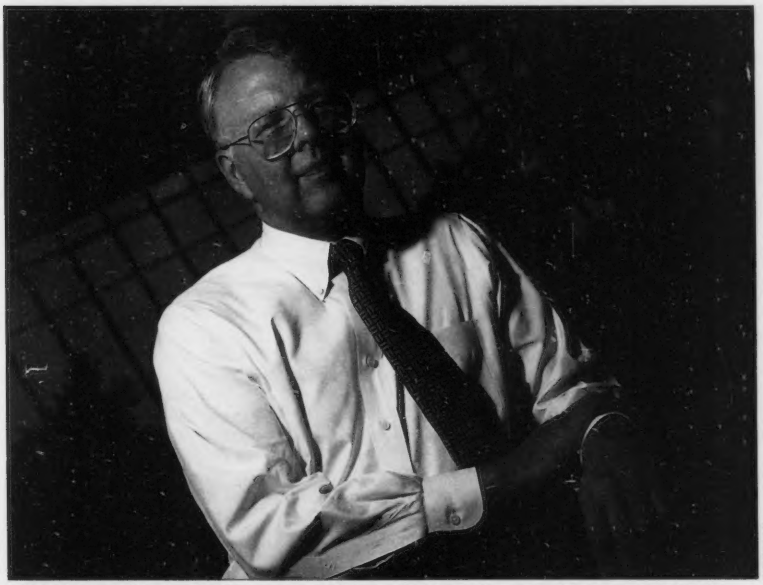
Schaefer admits that beyond the typical change-management issues, Monsanto IT faced deep structural concerns. In trying to bring formerly decentralized services such as help desk, desktop support and network infrastructure management into a central support center, the company has had to do significant re-engineering, he says. "Shared services looked great from 30,000 feet, but we didn't have the processes in place to support it," he says.

With so many difficulties attached to it, shared services is likely to make some IS staffers and management duck and run for cover. But if shared services is on the horizon for your organization, Amoco's Williams advises otherwise.

"You need to embrace, not fear, this change. If you execute it properly, insourcing will enable you to advance yourself to the status of a business partner like Price Waterhouse or [Integrated Systems Solutions Corp.]," two IT consulting firms, he says.

One way or another, companies are determined to get cost savings and service improvements from staff support functions such as IS. Execute insourcing wrong, and you may find yourself outsourced. ■

McWilliams is a freelance writer in Durham, N.H.



Tony Scarvel

JOHN SCHAEFER, director of shared services IT at Monsanto in St. Louis, says moving his company toward shared services in IS required significant re-engineering in the company. 'Shared services looked great from 30,000 feet, but we didn't have the processes in place to support it,' he says.

F.Y.I.

Executive Track

Les Lichter recently was named chief information officer at **Cable & Wireless, Inc.** in Vienna, Va. He was vice president and CIO at AT&T's Business Communication Services Division and had previously held management posts at MCI Communications Corp. Cable & Wireless is an international telecommunications company.

Alan G. Merten, 54, a former information systems professional who became a professor and dean, recently was appointed president of **George Mason University** in Fairfax, Va. He was dean of the school of management at Cornell University.

June E. Drewry, 46, recently was named senior vice president and chief knowledge and technology officer at **Lincoln National Corp.**, a financial services company in Fort Wayne, Ind. Drewry had been president of a broker/dealer unit of Aetna Life Insurance Co.

James B. King, 49, recently was appointed vice president of information services, operations and technology at **Fluor Corp.** in Irvine, Calif. King was previously director of information technology, business information services at TRW, Inc.

Marvin W. Adams, 38, recently was named CIO at **Frontier Corp.**, a Rochester, N.Y., telecommunications company. He was previously president of Financial Card Services Corp., a unit of Banc One Corp. in Columbus, Ohio. Adams succeeds Dave Patterson, 51, who resigned to pursue other interests.

Karen Zimmer recently was named senior vice president of information services at **New Line Cinema Corp.** in New York and Los Angeles. Zimmer, who will be based in New York, was formerly executive director of systems planning at Paramount Pictures.

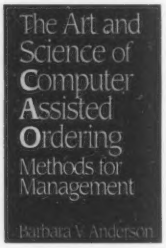
VTEL Corp. in Austin, Texas, has named **Stephen L. Cox** vice president and CIO. He previously served as director of IS at NEC America, Inc., a subsidiary of NEC Corp. VTEL is an industry leader in applications-oriented videoconferencing.

Dinesh Sheth recently was named senior vice president of systems and technology at **Skywire Corp.**, a manufacturer of wireless data products and services in Memphis. Sheth will oversee internal IS. He was vice president of software development and systems integration at Mobile Telecommunication Technologies Corp.

IS Manager's Bookshelf

The Art and Science of Computer Assisted Ordering
By Barbara V. Anderson
Quorum Books, Westport, Conn.; 248 pages; $65

If you work in the retail industry, you probably know that "just-in-time inventory" refers to goods delivered when they are needed, without sitting around in warehouses. But can you follow the conversation when users start talking about perpetual inventory? Available inventory? Double exponential smoothing and store physical maximums?



If not, take a look at this book. While not aimed specifically at information systems professionals, this is a good, detailed reference work for developers called on to write inventory tracking, retail space planning or product-ordering systems. The price is steep and the style somewhat dense, but this book may pay for itself when users begin talking about product categories and forecasting models of which you've never heard. The appendixes include a glossary and checklists of major factors involved in processes such as ordering, promotions, sales and merchandise mix. — *Robert L. Scheier*

Computer: A History of the Information Machine
By Martin Campbell-Kelly and William Aspray
Basic Books, New York; 342 pages; $28

This won't keep you up nights. But although it's dry, it's a very detailed chronicle of the development of computing — from the making of mathematical tables in the early 19th century to the Internet explosion.

The book details key triumphs by industry leaders and computer users. For example, there's the publicity stunt by Remington Rand, which used a Univac to correctly predict the 1952 presidential race on Election Night on national television.

And there's the story of Sabre, American Airlines' computerized reservation system, which revolutionized the air travel industry in the early 1960s. As if to highlight skepticism of information technology at the time, the book quotes American Airlines President C. R. Smith when he agreed to the $40 million project: "You'd better make those black boxes do the job because I could buy five or six Boeing 707s" for the same amount.
— *Rick Saia*

Redefining Corporate Soul: Linking Purpose & People
By Allan Cox with Julie Liesse
Irwin Professional Publishing, Burr Ridge, Ill.; 138 pages; $24.95

Sometimes you can't move forward unless you stop to contemplate your navel. Why do people want to work? What makes employees truly care about their jobs and the people with whom they work? How can you inspire a flagging organization? What makes teams effective?

The beauty of this short, easy-to-breeze-through book is that it asks these basic questions, quickly proposes interesting answers, and then concludes with a 38-page chapter considering how information technology can fit into the corporate "soul." Hard-bitten skeptics may find it mushy, but others will draw ideas and even inspiration from this book, which is written by a veteran management consultant and CEO. *Redefining Corporate Soul* is a fine way to kick off an IS leadership training program or an off-site retreat. — *Allan E. Alter*

What they're reading

What are the last three books you've read to help further your career?
Computerworld *asked a highly unscientific sampling of readers and got these answers:*

"**The Seven Habits of Highly Effective People,** *(by Stephen Covey, Fireside/Simon & Schuster)* to help me get better organized; **1001 Ways to Reward Employees** *(by Bob Nelson, Workman Publishing)* because there's a lot of pressure and a lot of stress, and the [information technology] department is constantly changing; and **Doing Business on the Internet** *(by Mary J. Cronin, Van Nostrand Reinhold).* I've read hundreds of books on the Internet; we're looking at how we can utilize the Internet for training."

— **Vince Chrisman,** manager of IS, Parker Amchem, Madison Heights, Mich.

"**Building the Operational Data Store** *(by William H. Inmon, John Wiley & Sons),* which is an application-specific, very practical approach to building [data stores]. **Building Internet Firewalls** *(by D. Brent Chapman and Elizabeth D. Zwicky, O'Reilly & Associates, Inc.)* and **Inside Windows NT Server** *(by Drew Heywood, New Riders Publishing).*"

— **Roy Wilsker,** director of technology planning, The Kendall Co., Mansfield, Mass.

"**The Discipline of Market Leaders** *(by Michael Treacy and Fred Wiersema, Addison-Wesley).* The two that will come next are **The Power of People** *(by Charles P. McCormick, Penguin Books)* and **Information Systems Outsourcing: Myths, Metaphors and Realities** *(by Mary Lacity and Rudy Hirschheim, John Wiley & Sons).*"

— **Mike Abbaei,** senior vice president, Legg Mason Wood Walker, Inc., Baltimore

"**Oracle7: The Complete Reference** *(by George Koch and Kevin Loney, Osborne/McGraw-Hill),* and **The Fifth Discipline Fieldbook** *(by Peter Senge et al, Doubleday),* which is touchy-feely, [but] some of the interpersonal [issues] it deals with are . . . a major problem. I'm reading a book on [Total Quality Management] for a class, **The Deming Dimension** *(by Henry R. Neave, SPC Press, Knoxville).*"

— **Jim Robinson,** programmer/analyst, city of Kansas City, Kan.

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30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please specify)

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19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner,General Mgr.
12. Vice President, Asst. VP
13. Treasurer,Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
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B. 10,000 –19,999	❒	❒
C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
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60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
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23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Mgt.
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(c) OS/2 (g) Windows
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C. 5,000 – 9,999	❒	❒
D. 1,000 – 4,999	❒	❒
E. 500 – 999	❒	❒
F. 100 – 499	❒	❒
G. 50 – 99	❒	❒
H. 20 – 49	❒	❒
J. 10 – 19	❒	❒
K. 1– 9	❒	❒

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Buyer's Guide

hack, whack, attack

Fledging NT firewalls guard their ground well in a review conducted for *Computerworld* by PC Lab

BY TED VEGVARI

After testing four Windows NT firewalls out of the barely half-dozen that are available or in beta, we found that these products are off to a great start. We hacked, whacked and attacked the tools, yet they survived.

A firewall is a system or combination of systems that enforces a boundary between two or more networks.

A quick analysis of four Windows NT firewalls found the following: Devon Software Corp.'s KyberPass, one of the first Windows NT firewalls on the market, has superb documentation. Two of the beta products tested, Checkpoint Software Technologies Ltd.'s FireWall-1 and Microsoft Corp.'s Catapult, never faltered. Netguard Ltd.'s Guardian has an innovative interface, and its reporting and management tools met our requirements.

All the products we tested completed network address translation (NAT) tests performed by using Hypertext Transfer Protocol (HTTP), file transfer protocol (FTP) and Post Office Protocol-3 (POP-3). An example of such a test would be to set up a security rule that identifies a specific machine, such as a POP-3 server, as having access through the firewall to the protected area. Because it's possible to assume the Internet protocol (IP) address of another machine and impersonate IP addresses, we recommend a challenge/response whenever possible.

We used NAT when we left the protected network area. We verified that private IP addresses were translated into public addresses by analyzing the access logs on the World Wide Web server and FTP server to verify that only the translated address was captured.

Preparation counts

The greatest challenges for network managers who set up corporate intranets and firewalls are the preparation and planning necessary to properly complete an installation. TCP/IP, although an old protocol, still wreaks network havoc for first- and second-time network managers.

We were surprised at how many companies we interviewed still haven't acquired an "official" range of TCP/IP addresses. They simply make them up, knowing that eventually they will have to reassign numbers to hundreds of PCs.

How does one obtain IP addresses? The InterNIC Registry, under the authority of the Internet Assigned Numbers Authority, allocates IP address space for Internet service providers to dole out to customers. An Internet Number Allocation: FAQ can be viewed at rs.internic.net/domain-info/numbers-faq.html and at www.rain.net/faqs/cidr.faq.html. ■

Vegvari is a principal at Computer People Resources, PC Lab, a testing and development firm in Torrance, Calif. He can be reached at tedv@pclab.com.

HOW WE DID IT

The firewalls we tested fall in one of two categories: intrawalls, which are internal firewalls that typically protect sensitive data within a network; or perimeter defense, which typically protect internal networks from outside connections. In the most common configuration, one firewall is placed between the "secure" network and the "public" network. Our tests included the following models:

Perimeter defense: NETWORK A <-> FIREWALL <-> INTERNET

Intrawall: NETWORK A <-> FIREWALL <-> NETWORK B

Both intrawall and perimeter defense: NETWORK <-> FIREWALL <-> WEB SERVER <-> FIREWALL <-> INTERNET

DAVID FLANERTY

Firewall setup

NT Firewall Product Reviews

Netguard's Guardian

Dallas, Texas
(214) 738-6950
www.netguard.com

Grade: B+

Guardian is an intrawall and a perimeter defense product. Because of its exceptional management and reporting capabilities, we found it to be more complex than, for instance, Microsoft's Catapult. The installation process required strict planning. There were five disks for the Manager software and two disks for the Agent software. The screens were well-laid out and easy to follow.

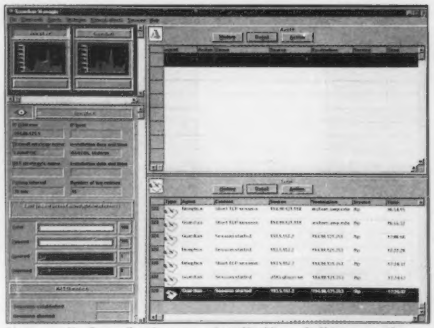
During the first installation, we decided midway that we wanted to change the configuration. We found it easier and more efficient to reinstall Windows NT and start from scratch. This was true for all the firewall products we tested.

Actual software installation took 3½ hours, including the time to double-check all entries and make very basic decisions about objects and rules. Defining rules is the heart of installation and was very complex.

In our opinion, no amount of documentation would reduce the learning curve. We would like to see a simpler approach.

We installed Guardian Manager and Agent on the same machine. Manager uses a unique encryption key to communicate with the Agent.

We defined a minimal number of services and allowed access to the Internet from workstations on the intranet.



Netguard's Guardian keeps a detailed log of all transactions, including content, source, destination and time

This feature worked well, and throughput over an Integrated Services Digital Network (ISDN) line was excellent, especially in view of the fact that all data between the Internet and the intranet passed through the firewall.

We tested the reporting features by attempting to log on with the wrong password and were impressed with the level of detail involved. We created and tested temporary rules to grant an outside individual temporary access to the intranet and to grant an internal user access to the outside. In both tests, the firewall successfully hid our internal IP address.

Performance and throughput were excellent. We transferred 200M bytes of data using four workstations — with and without the firewall in the path — with only a six-minute lag using the firewall. We didn't test the Agent software's remote management capability.

Summary: Performance and secure remote and centralized management capabilities are excellent. We highly recommend this product for use at midsize and large sites — especially where central management of remote sites, such as branch locations, is desirable. This product brings Unix-level security to Intel Corp.- and Windows NT-based PCs. We recommend a fast PC for high-volume sites and sites where many complex rules are required.

Strengths: Throughput exceeds most Ethernet and Token Ring backbones. No degradation was noticed with the firewall in place while transferring with FTP 100M-byte files among the secured server and 10 workstations on the test network. Performance easily exceeded the capacity of a T1 line.

Wish list: Simplification and self-configuration capabilities would make this product more desirable for new firewall users.

Pricing: Guardian Internet Firewall System 1.32, 50 users, $3,980; unlimited users, $6,980; additional gateway agents, $2,980; NAT option, $1,980.

Checkpoint's FireWall-1

Redwood City, Calif.
(415) 562-0400
www.checkpoint.com

Grade: A-

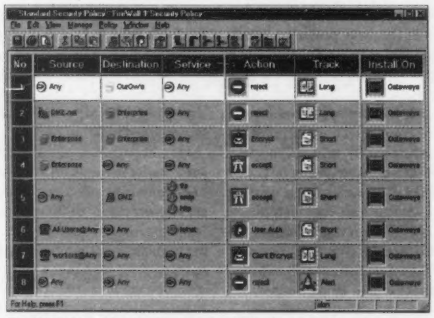
FireWall-1 is a public and private defense system, which, in our opinion, migrates Unix-level protection and rich feature sets to the NT platform. We installed FireWall-1's Enterprise edition, which included a FireWall Module and a Management Server. The system's status view depends on the Simple Network Management Protocol (SNMP) service under NT. We added an administrator name and defined a remote host on which we also installed only the FireWall Module.

The software requires that the graphical user interface clients be added. Authentication Daemons configuration allows selection of ports for client authentication, Telnet, FTP and HTTP. This product also tracks licensing to be installed or upgraded. Generating an RSA Data Security, Inc. encryption key took four seconds. We were then prompted to reboot.

We were pleased to see the program group had two icons: administration and uninstall.

FireWall-1's remote management scheme works as advertised. Its object-oriented user interface enabled easy implementation of a global security policy configured with a master and two managed firewalls on our test bed. This allowed us to add and remotely manage additional firewalls.

FireWall-1 uses an ordered set of rules that defines a specific security policy. In the case of routers, the access lists derived from the security policy are installed by FireWall-1 on the routers. For Cisco Systems, Inc. routers, FireWall-1 downloads the access list using an Expect session that emulates a Telnet session into the router. For Wellfleet Communications, Inc. routers, FireWall-1 uses SNMP. This is a critical function that can be especially helpful at midsize and large installations.



FireWall-1's object-oriented user interface enables easy implementation of a global security policy

With a few references to the documentation, we configured a set of rules to control access coming in to the secured network and going from the network to the Internet.

FireWall-1 automatically restarted itself, not the computer, after significant changes were made — for example, when we added remote modules to management services.

Throughput exceeds most Ethernet and Token Ring backbones, and there was no firewall degradation while transferring with FTP 100M-byte files among the secured server and 10 workstations on the test network. Performance easily exceeded the capacity of a T1 line.

Summary: This product can provide the level of protection required in most large environments. FireWall-1 is superbly suited for remote management.

Strengths: FireWall-1 performed very well in our tests and exceeded our expectations for remote management. Its ability to define attributes of objects to fine detail and to download access lists from our router earns our recommendation.

Wish list: Help screens and wizards should be available at every step.

Pricing: FireWall-1/150, $4,990, support for 50 nodes; FireWall-1/250, $9,990; FireWall-1/Enterprise, $18,900.

How complex?

For an information systems team with a midsize installation and limited knowledge of TCP/IP and Web servers, planning and installing a firewall can take from five days to a month. But experienced IS teams can have the software out of the box, installed and the rules configured — basic setup — in about three hours. This doesn't include planning. Of the products we tested, Checkpoint had the best quick-start guide document. It details which steps are necessary to set up the network objects and install a security policy. It also includes recommendations and general guidelines for users.

Test bed:

- Network servers — Compaq Computer Corp. ProSignia XL 500, 48M bytes RAM, 2G-byte SCSI 2 hard drives
- Web server — Compaq Deskpro XL 5100
- Firewall servers — Compaq Deskpro XL 5100, 32M bytes RAM, 1G-byte SCSI 2 drive
- 10 workstations — Compaq Deskpro XL 5100s, 32M bytes RAM
- Cisco router
- LAN for workstations — Cogent Information Systems EM110 Emaster Fast Ethernet, PCI adapters
- Four U.S. Robotics Corp. 28.8V Everything analog modems
- Four plain old telephone service analog phone lines
- Two dial-up PCs for remote access
- Windows NT AS 3.51 and 4.0 Server and IIS
- Windows NT 3.51 and NT 4.0 workstation

* Two network cards were installed in PCs operating as firewalls.

** The above hardware configurations remained reliable throughout the tests.

Devon Software's KyberPass

Ottawa, Ont.
(800) 845-1140
www.devon.com

Grade: A-

KyberPass installation was completed without a hitch. Following the impressively well-thought-out installation instructions, we configured our NT firewall server and deselected all the network protocols except TCP/IP. We turned off IP routing and chose workgroup network, as clearly explained in the setup instructions.

Distribution software is minimal — two disks — to install the product on the server. Installation took about eight minutes. After the second disk was inserted, a message stated "either this is a new installation, or setup was unable to detect an existing public-key repository. You must execute the CA-Elect application in the KyberPass program group to complete the installation." After that was done, we were given the option of installing KyberPass as an NT service, which we chose. For anyone tackling their first firewall installation, this product leads the pack for ease of setup.

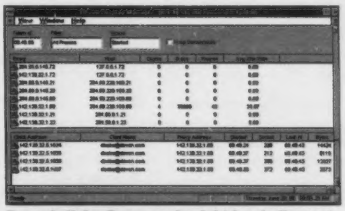
We ran the "CA-Elect" application and a wizard appeared to help us through the process. The next screen requested a "common name," for which we wanted an explanation. We clicked on Help and a Wizard Help screen gave a clear example to follow. The public key was generated and copied to a blank floppy disk. We found well-designed installation screens at each step.

We rebooted, ran the services applet from the control panel and manually started the service called KyberPass Authentication Server. It took three seconds to start, and we also set it to start automatically on Windows NT Server boot-up.

Management screens, options and functions were obvious, even to a new user. Icons were large, clear and well-designed. The three main screen buttons represented were Connection Manager, Display Manager and Log Viewer.

KyberPass Public Key Server uses a x509 standard-based public-key repository and operates in the NT memory space. It provides services via interwindows messaging with KyberPass and provides four real-time services: public-key cache; real-time validation and authentication; online key registry and revocation services; and permanent archive of certificates and revocations. Performance under heavy usage was excellent.

KyberPass uses public-key cryptography, which gives each user a pair of digital keys known



Devon's KyberPass may be right for challenge/response environments

as a public and private key. KyberPass also supports encryption between workstation and server.

On the workstation side, we installed KyberWin, which creates a secure tunnel that uses the RSA authentication authority and runs on Windows 3.1, Windows 95 and Windows NT 3.51 or higher. We installed and tested KyberWin without any problem. It ran in the background and only popped up when we logged on to a server through the KyberPass firewall.

We tested the key generator, and it worked as advertised. It requested a unique name — up to 255 characters — and password, requiring only a floppy disk. Generating the key took 16 seconds. KyberWin has to be installed on a workstation to gain access to a server that uses any communications software.

The following events occur: 1. An attempt is made to access a secured computer using TCP/IP; 2. KyberPass intercepts the request and sends back a challenge; 3. KyberWin senses the challenge and prompts the user for identification via a private key and password; 4. KyberWin sends the information to KyberPass, which retrieves the key, validates the digital signature and sends a secure session ticket to KyberWin, which gives the user access.

We set up a proxy service and successfully hid our internal IP addresses when we accessed the Internet from our internal LAN.

We found the key revocation of individuals and groups to be excellent. We attempted several unauthorized accesses using internal and external connections, and the log clearly showed failed logon attempts. Our test configuration supported a public service on one port and an internal private network on another port.

Throughput exceeds most Ethernet and Token Ring backbones. Performance easily exceeds the capacity of a T1 line.

Performance: Very good. We highly recommend this product for use in high-security situations where creation and management of RSA keys can be performed and maintained. This product brings Unix-level security to Intel- and Windows NT-based PCs.

Strengths: Of all the products tested, this one has the clearest documentation and was the easiest to follow, not just for the product itself but also for setting up NT to work with the product.

Pricing: Ranges from $500 for 10 users to $30,000 for 3,000 users.

Microsoft's Catapult

Redmond, Wash.
(206) 882-8080
www.microsoft.com

Grade: A-

Catapult is Microsoft's perimeter firewall for NT, and we predict it will do very well. This beta version is publicly available.

Catapult requires that Microsoft Internet Information Server (IIS) be installed first. Installation of IIS took about 15 minutes to complete. The prerequisite installation of IIS stopped only to confirm which Open Database Connectivity drivers to install and defaulted to SQL Server; it was remarkably simple.

Installation for Catapult was equally simple. It successfully pulled lower and upper IP addresses from the Internal Routing Table with the click of one button — an excellent feature that demonstrated a high degree of integration with NT and placed it at the top of the list for ease of installation.

For Remote Windows Sockets Access (RWSA), we chose the Machine DNS name instead of IP Address because the product integrates with and requires IIS. We also enabled proxy access. Setup restarted the Web service and displayed the "Installation completed" screen.

The management screen is very clear and easy to use and provides options for each of the five services listed: RWSA, proxy, Web, Gopher and FTP.

Of all the products installed, this was the most complete solution, with one caveat: It requires IIS.

Performance was excellent. We tested sustained simultaneous access using Web, FTP and network file transfer with excellent performance and stability. The Compaq Prosignia 500 CPU utilization remained low throughout this test.

Catapult uses the security service built in to NT, which is, in our opinion, the best way to go for many installations. This is a very valuable design feature and underscores the absolute importance of enterprise naming services.

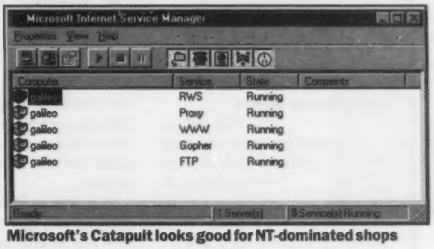
Also, this depth of integration with NT considerably decreased our learning curve.

Using remote dial-in, we were able to hide IP addresses by using the proxy service and to specifically configure exactly what type of access to Web server data we wanted and by whom.

Adding permissions by groups is very similar to setting up an account and access for a new user.

We created new user accounts and granted group permissions with various combinations of privileges for proxy, FTP, Gopher and Web services. All services worked as advertised, and the documentation was very complete. Hopefully, the final version will include step-by-step instructions such as those found in the KyberPass documentation.

Summary: We highly recommend this product for use in situations where NT is the primary network operating system and where a challenge/response system, such as that in FireWall-1, isn't required.



Microsoft's Catapult looks good for NT-dominated shops

Performance: Catapult offered among the best combinations of performance and integration with NT of the products tested.

Strengths: Of all the products tested, it required the least documentation and was the easiest to install.

Wish list: We would like to see the product support other Web server products and wish it didn't have to reside on the Web server.

In the works...

Besides the four Windows NT-based firewalls we tested for this Buyer's Guide, there are a handful of others that managers may want to consider. The products were unavailable for tests because they were either between versions or haven't been released.

They include the following:

- Raptor Systems, Inc.'s Eagle. The Waltham, Mass., company (www.raptor.com) was between releases at the time of our tests. Eagle 3.05 was in beta-testing and Eagle 4.0 had just been announced for September delivery.

  Raptor promotes Eagle 3.05's integration with Windows NT and support for Digital Equipment Corp. Alpha systems. Eagle 4.0, includes support for Virtual Private Networking, more user-authentication schemes and uniform resource locator blocking.
- Network-1 Software and Technology, Inc. will release its NT version of FireWall/Plus early in the fourth quarter.

  Network-1 describes its products as the only full-featured application filtering, multiprotocol firewall. It filters nearly 400 protocol suites, not just IP. It was designed to prevent outside Internet attacks and intranet attacks. The current version of FireWall/Plus can be downloaded free from the Network-1 Web site (www.network-1.com) for two weeks.
- Digital will release its AltaVista Firewall for Windows NT this week, but free trials are available through September by downloading the beta version from www.dec.com.

  It supports Intel and Alpha systems that run NT, and uses a fully controllable application level gateway for secure access to user-specific services. It also supports comprehensive logging with real-time alarming. Digital also says its installation is easier with its Windows interface.

References, etc.

Books:

Building Internet Firewalls, by Brent Chapman and Elizabeth Zwicky; O'Reilly, Inc.; 1995.

Firewalls and Internet Security: Repelling the Wily Hacker, by William Cheswick and Steven Bellovin; 1994.

Internet Firewalls and Network Security, by Karanjit S. Siyan and Chris Hare; 1996.

Web sites:

NCSA: Firewalls, Web and Internet Security
www.ncsa.com/ncsafws.html

Firewall Security Corp.
www.frus.com

Building Internet firewalls
www.greatcircle.com/tutorials/bif.html

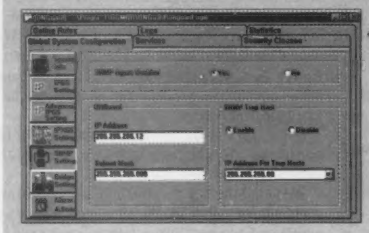
Conferences:

23rd Annual Computer Security Exhibition and Conference, Chicago. The exhibit will be Nov. 10-12; the conference will be Nov. 11-13. Vendors will announce and exhibit firewalls. Contact: Patrice Rapalus, (415) 905-2310. E-mail: prapalus@mfi.com

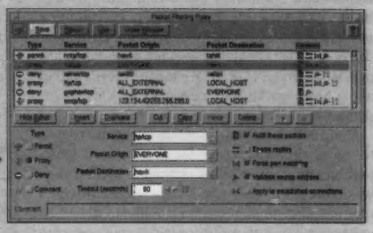
National Computer Security Association's (NCSA) Firewalls and Web Security Conference, San Jose, Calif. Conference will be Sept. 30-Oct. 1. Contact: NCSA, Kevin Stevens, (717) 258-1816, ext. 224. E-mail: kstevens@ncsa.com

PASSING THE TEST

The National Computer Security Association (NCSA) says the following firewall developers and their products have successfully completed NCSA's certification process:



One screen of On Technology's On Guard shows the global system configuration



The CyberGuard Firewall is offered by the former Harris Computer Systems Corp.

Atlantic Systems Group
TurnStyle Firewall System
Ronkonkoma, N.Y.
(516) 737-6435
www.asg.unb.ca

Secure Computing Corp.
(acquired Border Technologies, Inc.)
BorderWare
Roseville, Minn.
(612) 628-2700
www.border.com

Milkyway Networks, Inc.
Black Hole
Ottawa, Ont.
(613) 596-5549
www.milkyway.com

CheckPoint Software Technologies, Inc.
FireWall-1
Redwood City, Calif.
(415) 562-0400
www.checkpoint.com

Digital Equipment Corp.
AltaVista Firewall
Maynard, Mass.
(800) 336-7890
www.dec.com

Global Technology Associates, Inc.
GFX Internet Firewall System
Orlando, Fla.
(407) 380-0220
www.gta.com

CyberGuard Corp.
(formerly Harris Computer Systems Corp.)
CyberGuard Firewall
Fort Lauderdale, Fla.
(954) 973-5478
www.cyberguardcorp.com

IBM
Secured Network Gateway
Armonk, N.Y.
(914) 765-1900
www.ibm.com

Livermore Software Laboratories International
Portus 2.0
Houston, Texas
(713) 974-3274
www.lsli.com

On Technology Corp.
On Guard
Cambridge, Mass.
(800) 767-6683
www.on.com

Raptor Systems, Inc.
Eagle
Waltham, Mass.
(617) 487-7700
www.raptor.com

Technologic, Inc.
Interceptor
Atlanta, Ga.
(404) 843-9111
www.tlogic.com

Trusted Information Systems, Inc.
Gauntlet Internet Firewall 3.1
Glenwood, Md.
(301) 854-6889
www.tis.com

Radguard Ltd.
CryptoWall
Tel Aviv, Israel
www.radguard.com

Sun Microsystems, Inc.
SunScreen SPF-100
Mountain View, Calif.
(415) 960-1300
www.sun.com

NEC Technologies, Inc.
PrivateNet 1.0.1A
San Jose, Calif.
(408) 433-1226
www.privatenet.nec.com

User Woes and Wants

It worries us that our firewall service provider [PCI Systems, Inc.] doesn't tell us when there's been any suspicious activity.

— Pete Watson
Computer operations manager
Colonial Williamsburg Foundation
Williamsburg, Va.

I would like to see firewall technology become more of a turnkey solution where servers are preinstalled with the firewall product. Also, I would like to see voice identification added soon. It's an added level of security that is not arduous for the user.

— Victor Nazarian
Computer systems director
Harbour Inn Medical
Baltimore

Our problem is that the product [IBM Secured Network Gateway] looks like a dumb console. We would like it to be more graphical someday.

Also, only by studying the [hard copy] log can we find out if there's been any suspicious activity. We want some kind of warning system that would notify us immediately when someone was hacking in.

— Patrick Brennan
Operations manager
Essex County Newspapers, Inc.
Beverly, Mass.

At some point, I want more flexibility, where we can allow people to come in but where we can monitor and shut them down if they start doing anything suspicious.

— Larry McDonnell
Networking manager
Quinnipiac College
Hamden, Conn.

We chose [Cisco's firewalling router] because we can use any IP address we want for internal use. Then, when it goes out over the Internet, it's assigned a correct IP address which the router keeps track of so E-mail can be returned. We're confident it will reduce the hacking threat, since the IP addresses that we're all assigned aren't real.

Installation has been far more complicated than we planned on. We have two buildings that need to communicate, yet we need a firewall between them. The hard part was setting it up so valid traffic passes while stopping the rest.

— Richard Pope
Computer operations manager
ARUP Laboratories, Inc.
Salt Lake City

Comments pulled from a series of user interviews conducted by Kevin Burden, *Computerworld* senior researcher

You can leave 5250 emulation to chance, or leave it to IBM.

No guesswork.

All of the newfangled emulation products in the world won't help if your company's midrange computers aren't perfectly compatible with your PCs.

Fortunately, we can eliminate the risk. Thanks to IBM's 5250 Emulation Family, we can deliver on the promise of compatibility in connecting your PCs to midrange systems like the AS/400, System/36 and System/38.

From the most simple connections to the most complex, the 5250 Family provides superior quality and compatibility to suit your evolving needs. As a result, any 5250 twinaxial solution you choose will grow with your business.

Better still, the 5250 is a total solution of hardware and software that not only solves connectivity problems across your enterprise – but also anticipates them before they occur.

No one else has IBM's product depth or proven support, which makes us an ideal choice for your midrange connectivity needs. Why take a chance with something other than a sure thing? Learn more by calling us today. We're your local IBM Distributor/Business Partner.

IBM Business Partner

Compatible with you.

We'll get you connected right.

CHAMPION COMPUTER CORPORATION 1-800-771-7000

REAL APPLICATIONS, LTD. 1-818-226-6600

STAR Data Systems 1-800-789-9222

In Depth

Online

Editor turns electronic gumshoe,

Ira Winkler is laughing at my driving record. The ticket that really slays him is the one for "insufficient tire tread." "I mean, you've been a bad boy in general," he hoots into the phone, "but insufficient tread?"

Winkler is director of technology at the National Computer Security Association (NCSA) in Carlisle, Pa. It's odd that he's looking at my driving history because we've never met. I left him my name and date of birth in a voice-mail message one day and invited him to find personal information on me.

Why? The abundance of data available on the Internet, coupled with the point-and-click ease with which it can be gathered, is making a lot of people nervous.

It's a booming market. Information is everywhere — your state probably sells driver's license data, including your age and weight, to anybody with a checkbook — and once it finds its way to the Internet, it's there for good. And it's there, more importantly, for creative new uses.

One man found his T-shirt size, archived as carefully as a new star's location, while using a search engine — a byproduct of a World Wide Web-based clothing purchase. Another says he was "simply amused" when he received electronic mail asking him to enter a poetry competition a few weeks after some Web research led him to literary sites. Less frivolous is the case of the MIT student who, days after visiting the uniform resource locator of a neo-Nazi group out of idle curiosity, received E-mail asking if he would like more information. Yes, data-mining marketers are watching every Internet transaction you make and cross-referencing it with other information. Some of this transaction-tracking is active, as when you fill out an online registration card. "For every Web access," Winkler says, "there's an access log."

Less well-known, and more strenuously objected to by privacy advocates, is Client-Side Persistent Information, better known as "cookies." Cookies are bits of data that a Web server stores on your hard drive when you visit a site. The server can read this data on subsequent visits. One of the major uses of cookies is to track users' surfing habits. (Netscape Communications Corp.'s Navigator 3.0 allows you to set a Preference that alerts you when you encounter a cookie.)

Of course, information gathering — for business, government or prurient reasons — is hardly new. But the growing ease of online snooping has led to a new batch of questions on what should be publicly available.

U.S. Rep. Ed Markey (D-Mass.) is one of the questioners. In June, Markey introduced to the U.S. House of Representatives the Communications Privacy and Consumer Empowerment Act, which would direct the Federal Trade Commission and Federal Communications Commission to create rules protecting individuals' privacy online.

The bill has three major components: Consumers must know information on them is being collected; collectors must give notice that they intend to reuse or sell that information; and consumers must have an opportunity to refuse to divulge the information.

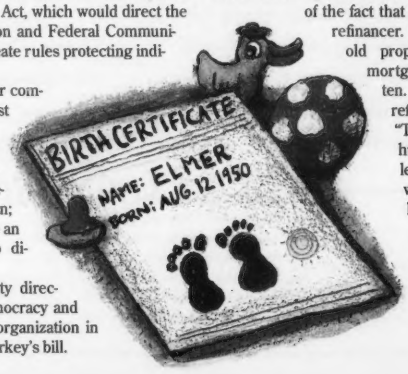
Janlori Goldman, deputy director of the Center for Democracy and Technology, a nonprofit organization in Washington, applauds Markey's bill.

"The new information technology makes it so easy to collect huge amounts of information and manipulate it at the push of a button," Goldman says. With Internet and Web technology so young, she sees a rare opportunity to give people more control "at the front end. Let people say, 'I'm not going to visit your site unless I get to decide'" whether data is gathered and reused.

Markey's bill is unlikely to be acted on by Congress this year.

Hey! That's personal!

In addition to my traffic tickets, Winkler got a kick out of the fact that I'm a chronic mortgage refinancer. He E-mails me proof of old property transactions and mortgages I had nearly forgotten. "You're about due for a refi," he says, rubbing it in. "Too bad rates are up, huh?" All it took for Winkler to find this information was a Lexis/Nexis college account.



One group that loves publicly accessible data and knows how to find it is private investigators. Pre-employment checking is a big business, and it's growing

ILLUSTRATIONS BY ANDREW SHACHAT

SNOOP!

digs up dirt – on himself

By Steve Ulfelder

because "Insiders are the ones to worry about," according to A. Michael Rosen, senior vice president and general counsel at Nashville-based Background America, Inc. "If I'm going to steal a billion bucks' worth of information from you, it's worthwhile to get an agent inside."

Background America specializes in searches of public records. Armed with my signature, the firm ran the same check on me that it would on any prospective employee for a corporate client. For a full list of what they found, see the box below.

Background America, like other private investigators, the law enforcement community and large employers, doesn't want to see privacy laws tightened, according to Rosen and Goldman. The easy access makes their jobs much easier.

But NCSA and Background America are professionals; they're *supposed* to find information on people.

Info a la carte

Most investigators offer a menu of services. A Background America pre-employment check, for instance, can cost $35 to $70. Here is some of the information the company can find:

- **Driving record**
- **Social Security number verification**
- **Real property transactions**
- **Military record, if any**
- **National wants and warrants**
- **Civil litigation, federal**
- **Civil litigation, state**
- **Address verification**
- **Credit check**

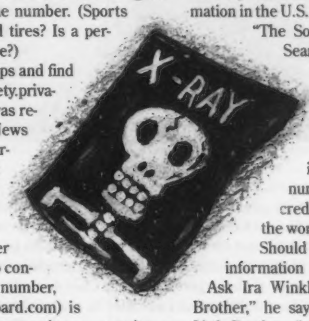
Moreover, they often rely on old-fashioned legwork. Most publicly accessible documents, though they exist online somewhere, aren't connected to a network. Accessing such information requires finding the right room in the right building.

Amateur hour

So I set out to dig dirt on myself, using only a browser and patience. I started with Corporate Investigative Services' Resource Page (www.hsv.tis.net/~pvteye/source.html). This page takes its time downloading, but it's worth it: a Nosie Nellie's paradise of reference, espionage and information sources.

First I cover the basics, searching for my name with half a dozen engines. My unusual last name helps; if you're a John Smith, be prepared to spend a while.

The search engines lead immediately to my *Computerworld* telephone number and E-mail address. A few links lead up blind alleys, but one — my status as a regional Sports Car Club of America director — gives my home address and phone number. (Sports cars? Speeding tickets? Bald tires? Is a personality profile emerging here?)



I search Usenet newsgroups and find only one post: to comp.society.privacy, interestingly enough, it was research for this story. Deja News Research Service, Inc. archives Usenet posts but goes back only to March 1995. But the company hopes to eventually archive all Usenet posts ever made, all the way to 1979. To confirm my home telephone number, Switchboard (www.switchboard.com) is the next stop. I key in my name and up pop my home number and full address.

I soon find the Southboro, Mass., mother lode: a Massachusetts Executive Office of Communities and Development page that profiles every town and city. Similar demographics are available on every state all over the Web. Here I learn almost everything I need to know about my town, from its 1990 population (6,628, all with nicer lawns than mine) to its largest employer (Nynex Corp.).

I poke around the 'net trying to find various other information about myself, but I soon run out of gas. I'm

let down until I total up the data: Despite a sparse collection of Usenet posts and Web references, I found an E-mail address, work and home phone numbers, a mailing address and enough demographic and circumstantial nuggets to start a sketch of my interests, income and lifestyle.

And I did all this without lying or stepping away from my PC. Doing either would have netted my Social Security number — the Holy Grail of personal information in the U.S. Why is it so valuable?

"The Social drives so much," says Joseph Seanor, president of investigation firm Cibir Corp. in Alexandria, Va., "but nobody thinks about it. Hell, they asked for my Social to get a local parking permit." Because it's the bulwark of legal identity in the U.S., a Social Security number can gain a snooper access to credit-card numbers, securities data — the works.

Should you be concerned about personal information jitterbugging around the globe? Ask Ira Winkler. "I'm not concerned about Big Brother," he says, "as much as I am about 20,000 Little Brothers." ■

Ulfelder is *Computerworld*'s senior editor of In Depth.

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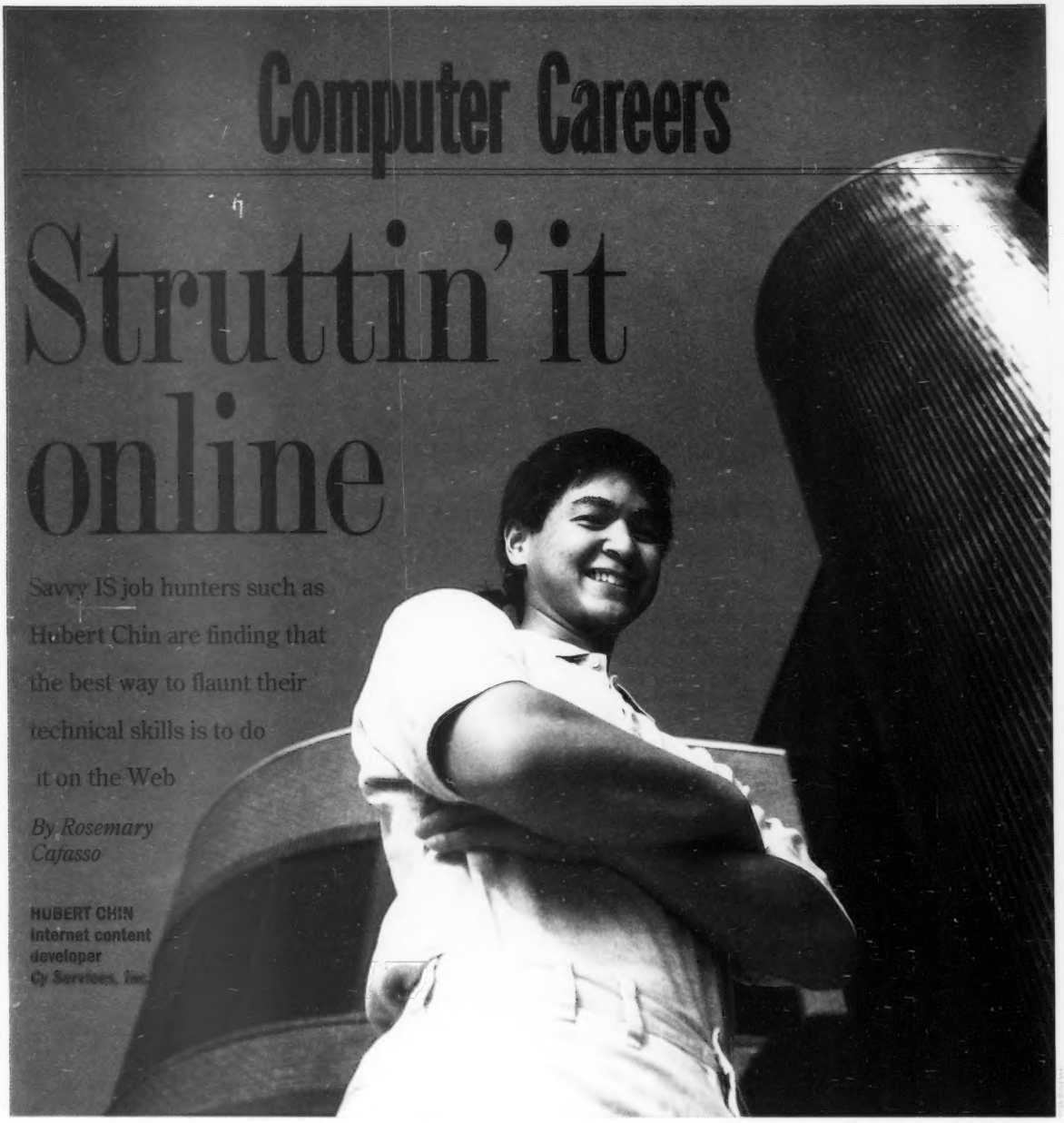
Want to know how the modern investigator finds information on the Internet? Joseph Seanor, president of Cibir Corp., hosts a forum on our Web site: www.computerworld.com.

Computer Careers

Struttin' it online

Savvy IS job hunters such as Hubert Chin are finding that the best way to flaunt their technical skills is to do it on the Web

By Rosemary Cafasso



HUBERT CHIN
Internet content developer
Cy Services, Inc.

When Hubert Chin, a former systems officer in the global finance group at Citicorp, was looking for a job last year, he went online. But Chin didn't stop there. He created an Internet-enabled, or Hypertext Markup Language, resume that would give hiring managers a view of him that a traditional resume simply couldn't provide.

That custom resume included color photos, a link to his personal home page (www.us.itd.umich.edu/hubt/) — which included everything from his favorite movies to a photo of his girlfriend — links to corporate home pages of former employers and a link to a Java applet that Chin designed.

"I wanted to be able to work for someone who knew what the Internet was all about," Chin says. It paid off.

Chin soon landed a job at Cy Services, Inc. in Dallas, an Internet content and services provider. Tim Levin, Chin's supervisor and president of the company, says it was Chin's technical experience, interests and — most important — his ability to communicate online that landed him the position.

Chin says an online resume "is almost a requirement if you want to do something related to the Internet."

Be daring (but correct)

The 'net may offer a new approach to job hunting, but recruiters and hiring managers say professional standards still apply

"People can be much more casual" when they communicate online, notes Tracey Weaver, vice president of human resources at Powersoft Corp. "You can find typos; people feel more cavalier."

Weaver and other hiring managers say an E-mail message can give an illusion of a casual chat. But when you're applying for a job, that E-mail message is still a first introduction to a potential employer and must be handled professionally.

Tim Levin, president of Cy Services, says, "I put a lot of weight on that first paragraph of an E-mail introduction. A lot of people don't send anything but the resume. If they don't have the ability to communicate, then that says a lot."

Bold and beautiful

Not all job hunters need to do as much as Chin. But IS professionals in the electronic job market should remember one important thing: The key to successful online job hunting is to exploit the power of this electronic resource. This isn't a lazy man's domain. If you just send a resume to a jobs database, you may get your share of calls from recruiters or employers. But the big success stories come from folks such as Chin who make the system work for them.

If job hunters are willing to invest the time and energy, they will find career-related services such as online advice about crafting an electronic resume, a range of resource tools — including company profiles — and direct access via electronic mail to potential employers. Successful job hunters say if you use those resources, you are more likely to find the job that truly suits you.

"You shouldn't be thinking of it as a static medium," says Ben Klau, an Internet recruiting specialist at Austin Knight, a recruitment advertising firm in Los Angeles. "The ones who are capitalizing on it are using the links" from resumes to other information sources.

Klau says creating more dynamic resumes isn't as difficult as it may seem, and sources such as America Online provide basic World Wide Web page builder programs that "do the coding for you."

A good starting point is the resume. Successful online job hunters say an online resume is stored in a database with thousands of others and will be searched by keywords. So instead of spending time trying to craft great prose, reexamine your work experience and highlight it with words that are bound to get flagged in a keyword search. Those words include Internet, Web, Java, SAP R/3 or Abap, client/server and Windows NT.

Another benefit to the Internet is the research tools it provides. Job hunters can learn about companies and markets by visiting corporate home pages, online newspapers, research services and archives.

Sneaking a peek

SETH RAVIN
Installation services manager
PeopleSoft, Inc.

Checking out corporate home pages helped Ravin land his job at PeopleSoft in Pleasanton, Calif.

Ravin, who previously worked at a Los Angeles-based consulting firm, says he spent hours researching companies and found that some provided more information than others. PeopleSoft, he says, posted financial information, growth rates and company values online.

"It was a much, much more sure fit," Ravin says. "Most people in the old days could go into an organization and not really know about it and hope for the best. I felt I had a better chance [with PeopleSoft] because I understood the organization before I even applied."

Ravin says if a job hunter is willing to invest the time, the payback could be big. "There is a shift to being much more interactive," Ravin says. "It requires a little more time and effort to dig through the sites instead of calling a recruiter and telling him to find you a position."

Touring the hot spots

CLARE CARTER
Programmer/quality control engineer
Filoli Information Systems

Carter is another job hunter who says the investment of spending many hours online eventually paid off.

"You have to do it every day, and you have to keep your eyes open. Some days I would find nothing," Carter says.

By regularly visiting job sites on the Web, Carter learned which jobs were hot and which companies were looking to fill them. After she posted her resume with CareerMosaic and searched jobs databases and corporate home pages, she landed her current job at Filoli, a software developer in Palo Alto, Calif.

There is also the possibility of finding a job just by being in the right online place at the right online time.

All the right moves

STEVE EBBETS
Systems engineer
Shiva Corp.

Ebbets was working for a government contractor in Washington last year when he began to doubt there would be much future growth at the company. He was just beginning to think about looking for a new job when he happened to download technical information from Shiva's home page. He decided to take a look at the communications software company's job listings. Sure enough, Shiva had a job available that required experience with government contracts as well as technical skills. Bingo.

"I had been using Shiva products for about eight years, and I had a lot of respect for the company," Ebbets says. "I E-mailed them a copy of my resume, and about three weeks later, I got a phone call."

After a series of in-person interviews, Ebbets was offered the position. He started working at Shiva early this year.

Cafasso is a freelance writer in Walpole, Mass.

Rules of the game

Margaret Reilly is recognized as a key resource to online job hunting. An industry consultant, she recently wrote The Guide to Internet Job Searching. *She also provides a range of online help to job seekers at www.jobtrak.com/jobguide. Reilly offers the following advice for online job seekers:*

1. SKILLS, NOT TITLES
"When searching databases, don't focus too much on job titles because not every company uses the same title for the same job. Conduct a search by phrases and words that describe your skills."

2. SHOP AROUND
"Don't depend too much on the big-name databases. Make them a regular part of your job search, but spend some time exploring specialized sites as well."

3. COST AND CONTROL
"Consider posting your resume, but keep in mind that once you submit to a third party, you don't have 100% control over it. Unless you need special help in creating a resume, opt for using one of the big Web sites or a Usenet newsgroup, where you can post for free."

4. LOOK BEFORE YOU LEAP
"If you are contacted by a recruiter or company with which you aren't familiar, make sure you check it out thoroughly before pursuing it further."

5. FOLLOW THE RULES
"Pay attention to employers' instructions on applying for a position. If the company says to fax your resume, don't think it would be smarter to E-mail it. That'd take one keystroke to delete you because you've proved you can't follow instructions."

Sites to visit

The Internet offers an almost endless number of options for job hunters — from services on how to create resumes and cover letters to job listings and resume postings. Here's an overview of what's available:

CORPORATE HOME PAGES
Most major corporations have Web pages. You can find addresses in jobs databases and in a company's print and television advertising. If that fails, try typing in a company's name as a possible Web address. The larger the company, the more simple the address. Chances are, you'll land in the right spot.

THIRD-PARTY SERVICES
Several big-name services on the Web offer similar services. The larger ones include Online Career Center (www.occ.com), CareerMosaic (www.careermosaic.com) and The Monsterboard (www.monster.com). Each contains a database of job listings and a search engine that lets you peck through listings by geographic region and keywords.

They also contain resume databases that allow you to post your resume anonymously. And they contain a variety of corporate information, such as employer profiles, and career services.

ONLINE CLASSIFIEDS
Daily and trade newspapers (including *Computerworld*) list their classified advertisements online. Other options include the one-stop shopping provided by CareerPath (www.careerpath.com). It's run by a group of major daily newspapers, including *The New York Times*, *The Washington Post*, *The Boston Globe*, *The Chicago Tribune* and *The San Jose Mercury News*.

USENET
Dozens of job-related newsgroups provide access to jobs by geographic location and specific job categories. These include newsgroups such as bionet.jobs, a listing of biotechnology positions; us.jobs.misc, which lists miscellaneous postings in the U.S.; and triangle.jobs, which lists jobs in the Research Triangle Park region of North Carolina. The newsgroups can be accessed from online services.

ONLINE SERVICES
Services such as America Online offer access to a range of job-hunting sites and services by typing in keyword "Career." This includes job search tips, access to chat rooms on job issues and links to third-party services.

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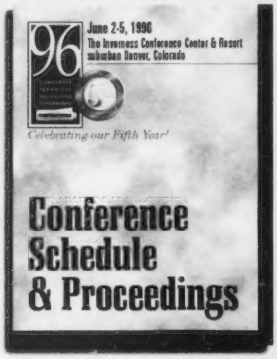

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SENIOR PROGRAMMER ANALYST: Plan, develop, test and document business application software using Informix 4th Generation Language (I4GL), Informix Structured Query Language (ISQL), Embedded Structured Query Language (ESQL) and C language on client's UNIX-operated minicomputers, applying knowledge and experience in I4GL, ISQL, ESQL and C programming techniques with Informix Relational Database Management System (RDBMS) On-Line Engine. Evaluate user requirements, formulate program development plans and specifications, and convert into I4GL, ISQL, ESQL and C programs, using structured analysis and design. Enter programs into client's UNIX-operated minicomputer system, generate executables using Informix software development tools along with UNIX developmental tools, analyze and perform unit-test for correcting errors and increasing efficiency. Req'ts: Bachelor's degree (or equivalent education) in Computer Science. Two years' experience in the above job duties. Must be able to spend 70% of the time in the field at clients' business locations. 40 hrs/wk; 8 AM to 5 PM; Salary: $72,800/Yr. Refer to J.O. #9059041 and Report/Submit resume to the PA Job Center at: Mr. James McCoy, Manager, Office of Employment Security, 6206 Broad Street, Pittsburgh, PA 15206

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PROGRAMMER ANALYST [2 openings] (Ref#: 91396): Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding in language processable by computer; apply knowledge of computer programming techniques & computer language; design, development & implementation of a Graphical User Interface applica-tion in client/server environment; design, development, system testing & implementation using MS-Windows, OS/2, MS Windows NT, MS SQL Server, LAN Manager, MS-Visual Basic, MS C/C++, Microsoft Visual C++, MFC, MS Windows SDK, DB Library, MS Access, ODBC, Crystal Reports, DDE and NSM. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp.; 2 yrs. exp. in the job offered or 2 yrs. exp. in related occup. such as Programmer, Programmer Analyst, Software Engineer or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or in related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including developing using Client-Server computing & Graphical User Interface & using each of the following: OS/2, MS Windows SDK, MS C/C++, Visual Basic, SQL Server and ODBC. $42,940/yr, 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave., Rm. 415, Detroit, MI 48098 & include Ref#. Employer Paid Ad.

PROGRAMMER ANALYST [2 openings] (Ref#: 91496): Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; analysis, design, development & implementation of systems in Client/Server environment using GUI tools under multi hardware/software platforms and using: IBM PC, MS DOS, C/C++, MS Visual Basic, MS SQL Server, Crystal Reports, ODBC, MS-Windows, Windows NT, OS/2, MS-Access, LAN Manager, MDI Gateway, CSCAPE, Clipper and MS Visual C++. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp. 1 yr. exp. in job offered or 1 yr. exp. in related occup. such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including analysis, design & development & using each of the following: MS DOS, C/C++, MS Visual Basic, MS SQL Server, MS Visual C++ and ODBC. $39,800/yr, 40 hrs/wk, 8a-5p.

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SYSTEMS ENGINEER required. Design & development of Client/Server solutions using C/C++, Object Oriented design methods, Motif programming, distributed & parallel processing techniques, Remote Procedure Calls for database synchronization, expertise with UNIX System level programming (Korn & C Shell, Shared Memory segments, Sockets, etc.) & Assembly language coding for UNIX systems. Extensive work with TCP/IP, UDP/IP, FTP & other communication protocols as well as hardware simulation/testing using Verilog PLI, Verilog HDL & other utilities. Master's Degree or its equivalent required in Math, Computers, or Engineering plus 1 year experience in the job duties described above. Must be willing to relocate to various unanticipated worksites throughout the USA every 4 to 10 months- Employer Paid. Must have proof of legal authority to work in the U.S. Salary - $80,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. #TX7855610. Ad Paid by An Equal Opportunity Employer.

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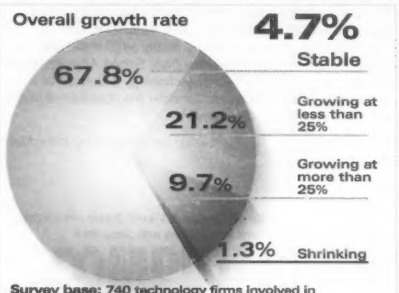
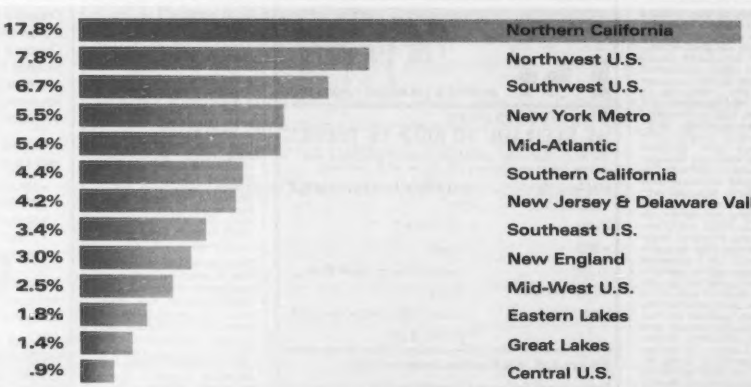


Survey base: 740 technology firms involved in Subassemblies & Components

Survey conducted between May '96 and July '96;

Regional Growth Analysis



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000+ technology manufacturers. This survey relates to the 31,439 tracked firms with fewer than 1,000 employees.

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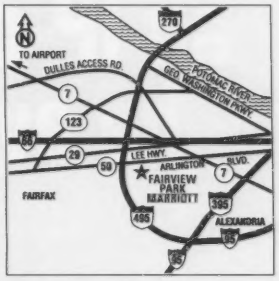

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	How to Pick the Right People Dr. William Swan, President, Swan Consulting
	Soft Skills and the "Invisible Assembly Line" Tony Barrile, President, Barrile & Associates
	How the Techno MBA Fits into the Business Solution Joan B. Craig, Director, Placement & Career Svcs., U. of Pittsburgh
	Proactive Recruitment Techniques Dave Drugman, President, Bay Cities Research, Inc.
12:15pm	**Luncheon Keynote: Industry Trends** Maryfran Johnson, Executive Editor, Computerworld
	Repeat of Concurrent Sessions
	Town Hall Forum Gary Cluff, President, Cluff and Associates
6:00pm	**Program ends**

Selected sessions include:

Proactive Recruitment Techniques

Dave Drugman, President, Bay Cities Research, Inc.
To remain competitive, today's technical recruiters need to be aware of the latest trends in sourcing and proactive recruiting. This in-depth session from a leading expert will explore this critical topic and will help you put your resources and expectations into proper perspective.

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Luncheon/Keynote Address

Maryfran Johnson, Executive Editor, Computerworld
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Gary Cluff, President, Cluff and Associates
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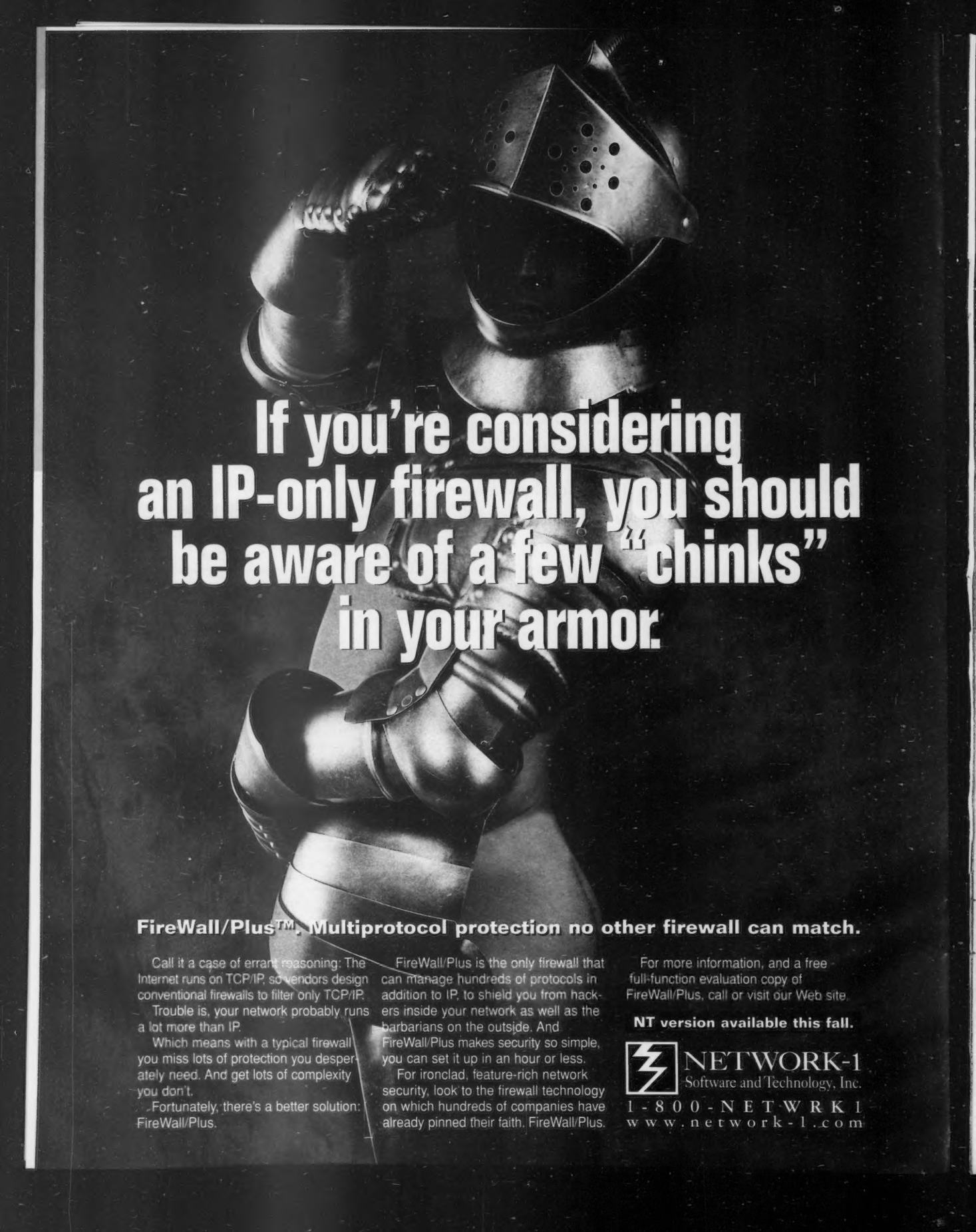

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Marketplace

INTERNET-MANIA spurs demand for document management

By Lynn Haber

The Internet creates a universal client and common platform, provides low-cost access to a document collection and is fast being recognized as a technology that will reshape how organizations conduct their businesses and communicate with users and customers. Consequently, document management is becoming a necessity.

The Internet eliminates cost and redundancy, says Ronni Marshak, editor in chief of "The Workgroup Computing Report" at Patricia Seybold Group in Boston. But organizations need to manage the documents they deliver to make them useful. "Companies are attempting to do this using document management software, creating a Web-based repository and coordinating documents at different Web sites," she says.

Officials at KMS Co., a commercial printer in Woburn, Mass., say the company needs document management on the World Wide Web. Although its customers have been submitting orders electronically for five years, KMS only recently gave them electronic access to its document repositories. Now, Internet access allows customers to view current jobs online and check job status, document version and projected completion date.

"All the things customers would phone to ask us about" are available online, says Jeffrey Hill, vice president of technology at KMS. Direct access to orders gives customers the answers they want and lets employees do what they do best: print.

KMS uses the RDM document management system from Interleaf, Inc. in Waltham, Mass., for revision control and archive management. The company uses Interleaf's BusinessWeb to give customers access to its document repositories.

Tangled web

Internet and intranet access is easy; administering Web documents and information isn't. In fact, that is where many organizations trip up. A stale Web site is a lonely Web site. Document management systems are ideal to manage a back-end Web server, help control document versions and provide content security. The key to successful publishing on the Web is to get the latest version.

Understanding the benefits of pairing document management with the Internet is obvious at Bechtel Corp., a global engineering and construction firm in Houston that has more than 14,000 employees.

"The value added from document management is increased productivity because it helps us to control and manage changes, which is what most of our work is all about," says Darrell Delahoussaye, technology specialist at Bechtel. Combine that with the Internet, and Bechtel gains broad customer access and cost-efficiency but doesn't need dedicated workstation software. Bechtel uses Accelera from Documentum, Inc. in Pleasanton, Calif.

Most major document management vendors offer an Internet-enabled version of their product or will soon.

For organizations where sharing documents with customers and suppliers is critical, document management offers a substantial return on investment — several hundred percent or more — better documentation and reductions in cost and time, according to industry analysts. "A document-intensive business can easily spend upward of one quarter of a million dollars on [overnight shipping] alone," says Scott McCready, principal at IDC/Avante Technology, a consultancy in Framingham, Mass.

Brian Kemerait, director of the management information resource center at North Carolina State University in Raleigh, says the combination of document management and the Internet is a fantastic marketing tool for the university. "Students will be able to apply for admission by clicking on to our Web site," he says. Down the road, Kemerait hopes to introduce a paperless application.

Today, document management over the Internet is a read-only phenomenon. Users can search, view and print from their browsers. Workstation-based document management systems let users create, modify and delete. "We need the richer functionality in the browser," Delahoussaye says. And vendors appear to be listening. ■

Haber is a freelance writer in Norwell, Mass.

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- Management of document versions.
- Creation of an audit trail to know who has viewed, changed or printed each document.

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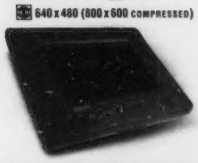

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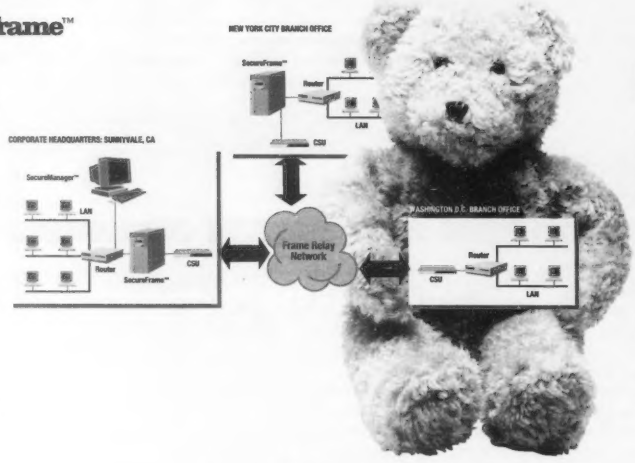

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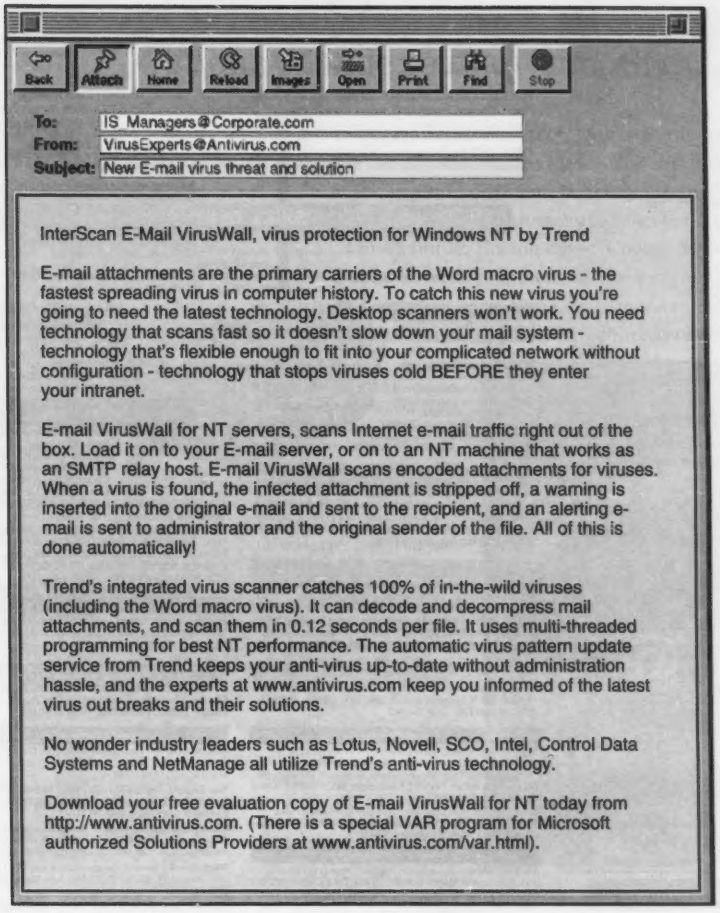

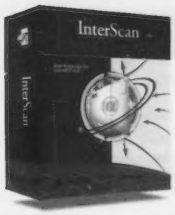

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It's uphill for Unisys, 104

Finance & Investing

Next week: Web spells opportunities for Documentum

Taking high tech's temperature

Options on indexes can smooth the ups and downs

Exchange-sponsored indexes

NASDAQ
- Nasdaq Computer Index

AMERICAN STOCK EXCHANGE
- Computer Technology Index
- The Morgan Stanley High Technology 35 Index
- Networking Index
- North American Telecommunications Index
- Interactive Week Internet Index

CHICAGO BOARD OPTIONS EXCHANGE
- Technology Index
- Internet Index
- Software Index
- Telecommunications Index

PHILADELPHIA STOCK EXCHANGE
- Semiconductor Sector Index

PACIFIC STOCK EXCHANGE
- Tech 100 Index

Short course

INDEX: A statistical composite of a select group of stocks used as a thermometer to gauge changes in the financial markets or price movements of stocks in particular industries.

OPTION: The right, but not the obligation, to buy or sell a predetermined amount of stock at a specified price. If the option is not exercised during a set period of time, the option expires and the buyer forfeits the premium paid to purchase the option.

Options on indexes: Options on the movements of stock indexes. Essentially, the purchaser of such an option is making a bet on the direction the index will move within a certain time frame.

The popularity of high-tech stocks in the past year has prompted the development of a number of tailor-made indexes that serve as a thermometer for the industry, particularly in the Internet segment. Not only are these indexes good research tools, but they also provide investors with opportunities to take advantage of growth in this volatile sector.

For example, Boston-based Cowen & Co. recently introduced nine Internet indexes that focus on subsegments of the Internet business such as access providers, hardware, security and software. In addition, the American Stock Exchange added the Interactive Week Internet Index to its existing family of technology indexes.

PAUL WATSON

An index is a statistical composite of stocks chosen to represent movement in the stock market as a whole or in a particular segment of the market. For example, the Dow Jones industrial average is an index.

"One of the purposes of an index is to see how companies in an industry fare against the market," says Maria Lewis Kussmaul, managing director at Cowen. Cowen introduced the Internet indexes to help meet investors' thirst for increasingly specialized information, Kussmaul says. Data gleaned from the indexes can serve as a measure of how well specific groups, such as Internet service providers, are performing relative to other Internet stocks. "These [indexes] provide a place to start asking questions and to start discerning trends," she says.

For example, if an entire industry segment was facing increased government regulation, an investor could study the index and its particular stocks. While the index might fall because of the regulation, a high-performing stock in the index might indicate that it is relatively immune to the adverse affects of the regulation, which might lead to a smart stock purchase.

Cowen plans to cook up new indexes as they become appropriate. Already, the firm has plans for a search engine index, Kussmaul says.

In and of themselves, indices are not investments. But since the early 1980s, exchanges have been selling options on indexes as a way for investors to hedge their portfolios. These options, which are traded on the exchanges, allow investors to bet on the movement of the index. Investors can use the options as a form of price insurance.

For example, an investor who owns several technology stocks may buy a sell option, called a put, on the index that includes those particular stocks. The value of the put will increase as the index declines, thus generating revenue to offset the decreased value of the stocks. If the index rose, however, the investor would lose the money paid for the unexercised option, like an insurance premium, but would post gains on the original investment portfolio. Conversely, a call, or buy option, is a bet that the index will rise. The call will rise in value as the index rises and fall as the index falls.

By Sara Mason

According to an Amex spokesman, individual investors have been more active in technology index options than other types of index options, reflecting the intense interest in Internet and technology stocks. Meteoric Internet stocks, in particular, have become a prime target for index options. Investors who believe Internet stocks will continue their rapid rise are buying calls; those who think the sector is overvalued are buying puts.

Amex sells options on its Interactive Week Internet Index. It is also possible to buy options on any of the exchange-listed technology indexes (see chart). In addition, the Chicago Board Options Exchange plans to list options on the Goldman Sachs Technology Indices, a family of seven equity indexes.

Even so, options are not without drawbacks. It is tough to predict the movement of a group of stocks to any degree of accuracy, particularly within a limited time frame. If your bet is wrong, the option is not exercised and the money paid for it is forfeited.

And the cost of options is hefty enough to scare many individual investors away. For example, an "at-the-money" call option with an August expiration date on the Interactive Week Internet Index costs about $780 as of late July, according to an Amex spokesman.

At-the-money means that the index is currently trading at the exercise price of the option. In addition, investors often must be deemed eligible by their brokers to trade options. Brokers determine this by the size of the individual's account and by how well he knows and understands how options work.

Mason is a freelance writer in Somerville, Mass.

The Week in Stocks

Gainers

PERCENT

Lycos Inc.(L)	34.7
Quarterdeck Corp.	23.6
Ross Systems	20.5
Cirrus Logic	20.2
Platinum Software	18.8
Micron Technology	18.5
Proteon Inc.	18.2
Brooktrout Technology	17.8

DOLLAR

Security Dynamics Tech.	10.00
IBM	4.63
Cabletron Systems	4.38
3 COM Corp.	3.88
Micron Technology	3.88
Intel Corp. (H)	3.69
Filenet Corp.	3.50
Computer Associates(H)	3.38
US Robotics	6.63
America On-Line	6.13
Comshare Inc.(L)	5.75
UUNET Tech.	5.00
Shiva Corp.	4.88
Red Brick Systems Inc.	4.75
System Software Assoc.	3.88
Shared Medical Systems	3.25

Losers

PERCENT

System Software Assoc.	30.1
Comshare Inc.(L)	29.5
Red Brick Systems Inc.	17.3
America On-Line	17.1
Radius Inc.	16.4
Cayenne Software Inc.(L)	15.4
US Robotics	11.1
Truevision Corp.	10.9

Industry Almanac

Unisys slips

It's not easy to make a speedy server company out of an old mainframe maker. At least, that's what **Unisys Corp. (NYSE: UIS)** is discovering as it struggles to reinvent itself.

Unisys recently reported an 86% drop in its second-quarter profits. It earned only $5.3 million in the quarter, compared with $39.8 million in the same period a year ago, for a loss of 14 cents per share. Revenue dropped to $1.51 billion this quarter, from $1.52 billion in the second quarter last year.

Repeated delays in the delivery of its latest product, ClearPath enterprise server, are a major factor in the loss. Testing the new line's most powerful model is taking months longer than expected. This delay will continue to harm financial results, company officials say.

Unisys had planned to ship the high-end model at the end of the second quarter, but the company doesn't expect ClearPath to be ready until the end of the fourth quarter.

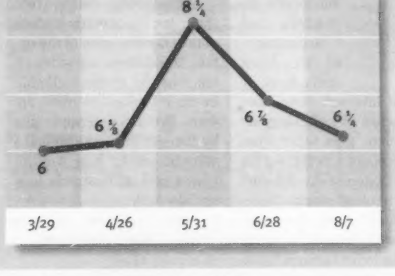
Such delays have chipped away at investor confidence, says Michael J. Geran, an analyst at the Pershing Division of Donaldson, Lufkin & Jenrette Securities Corp. in Jersey City, N.J. "The market's skeptical of their future," Geran says. "They've exhausted the patience of the institutional community."

To overcome that skepticism, Unisys will have to deliver solid earnings, improve the rate of orders and generate more cash, Geran says.

Geran gives the stock a neutral rating. But for investors who insist on buying it, he recommends the company's convertible preferred stock, which carries a yield of 12%. — *Tam Harbert*

Slip sliding

Unisys needs to deliver key products on time and improve earnings



Exch	52-Week			Aug. 9 Noon	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 1.36%**
COMS	53.63	33.50	3 COM Corp.	46.88	3.88	9.0
AIT	66.88	47.50	AMERITECH Corp.	56.00	-1.38	-2.4
T	68.88	49.25	AT&T	54.88	0.75	1.4
ASND	71.25	15.25	Ascend Communications	52.50	-0.13	-0.2
BNYN	13.63	6.00	Banyan Systems Inc.	6.38	0.13	2.0
BAY	50.00	20.25	Bay Networks Inc.	25.13	2.50	11.0
BEL	80.38	43.50	Bell Atlantic Corp.	60.00	-1.50	-2.4
BLS	45.88	32.63	BellSouth Corp.	39.88	-1.75	-4.2
BRKT	32.75	6.88	Brooktrout Technology	21.50	3.25	17.8
CS	87.75	50.13	Cabletron Systems	64.63	4.38	7.3
CSCC	74.75	14.00	Cascade Communications	69.63	0.63	0.9
CGRM	25.13	12.25	Centigram Communications	14.25	0.00	0.0
CSCO	59.13	27.25	Cisco Systems Inc.	58.88	3.13	5.6
CLIX	9.25	4.50	Compression Labs Inc.	6.63	0.00	0.0
CMNT	10.50	4.00	Computer Network Tech.	6.00	0.13	2.1
XCOM	14.50	8.00	CrossComm	9.63	1.06	12.4
DIGI	64.00	21.88	DSC Communications	32.06	0.56	1.8
FORE	44.75	15.38	FORE Systems Inc.	30.63	1.38	4.7
GDC	21.88	9.13	General Datacomm Inds.	11.50	0.25	2.2
GSX	40.13	28.00	General Signal Networks	39.25	0.25	0.6
GTE	49.25	35.63	GTE Corp.	41.63	-0.75	-1.8
LU	39.25	29.75	Lucent Tech.	36.88	-1.63	-4.2
MCIC	31.13	22.38	MCI Commmunications Corp.	26.25	-0.50	-1.9
MNPI	34.50	5.50	Microcom Inc.	9.38	1.13	13.6
NETM	34.00	7.63	NetManage Inc.	9.38	-0.25	-2.6
NTRX	10.88	3.63	Netrix Corp.	7.38	0.13	1.7
NCDI	12.00	2.88	Network Computing Devices	4.50	0.56	14.3
NWK	42.00	11.50	Network Equipment Tech.	12.50	-0.88	-6.5
NETG	17.63	15.00	Network General	19.75	0.13	0.6
NN	74.25	25.00	Newbridge Networks Corp.	46.63	-0.75	-1.6
NT	55.88	31.50	Northern Telecom Ltd.	50.38	0.75	1.5
NOVL	21.63	10.13	Novell Inc.	11.94	1.00	9.1
NYN	59.25	43.13	Nynex Corp.	45.00	-1.38	-3.0
OCTL	26.25	12.63	Octel Communications Corp.	23.88	-0.50	-2.1
ODSI	43.25	16.50	Optical Data Systems Inc.	21.00	-0.25	-1.2
PAC	35.25	25.88	Pacific Telesis	34.38	-0.75	-2.1
PCTL	44.72	20.75	Picturetel Corp.	37.38	-0.25	-0.7
PTON	10.75	2.38	Proteon Inc.	3.25	0.50	18.2
RACO	7.63	3.88	Racotek Inc.	4.25	0.00	0.0
RETX	10.88	1.81	Retix	6.06	-0.25	-4.0
SBC	60.25	46.25	SBC Communications	49.63	-1.13	-2.2
SFA	22.25	11.38	Scientific Atlanta Inc.	13.63	-0.25	-1.8
SHVA	87.25	20.38	Shiva Corp.	55.38	-4.88	-8.1
FON	45.50	29.25	Sprint Corp.	38.50	0.25	0.7
SMSC	23.50	10.25	Standard Microsystems Corp.	11.94	-0.94	-7.3
TBIT	13.88	0.00	Telebit Corp.	12.88	0.00	0.0
USRX	105.50	32.25	US Robotics	52.88	-6.63	-11.1
USW	48.38	28.38	U S West Inc.	31.00	0.00	0.0
XIRC	17.50	8.88	Xircom	13.38	0.00	0.0
XYLN	76.00	34.00	Xylan Corp.	47.75	0.25	0.5
PCs and Workstations						**UP 1.99%**
AALR	10.38	5.88	Advanced Logic Research	8.25	0.75	10.0
AAPL	46.25	16.00	Apple Computer Inc.	23.00	1.38	6.4
ASTA	15.88	4.38	AST Research Inc.	5.00	0.00	0.0
CPQ	57.50	35.88	Compaq Computer Corp. (H)	57.13	0.75	1.3
DELL	58.38	23.00	Dell Computer Corp. (H)	57.94	-0.06	-0.1
GATE	42.63	18.00	Gateway 2000 Inc. (H)	40.44	-1.69	-4.0
HWP	57.75	36.50	Hewlett Packard Co.	45.50	0.38	0.8
MUEI	29.88	8.75	Micron Internantional Inc.	14.00	0.38	2.8
NIPNY	75.13	49.88	NEC America	52.50	-0.25	-0.5
SGI	44.88	20.00	Silicon Graphics	23.38	1.63	7.5
SUNW	67.13	22.63	Sun Microsystems Inc.	55.88	-1.88	-3.2
Large Systems						**UP 2.42%**
AMH	13.50	6.75	Amdahl Corp.	10.00	0.00	0.0
DGN	19.13	8.88	Data General Corp.	10.75	-0.25	-2.3
DEC	76.50	30.50	Digital Equipment Corp.	40.25	3.25	8.8
IBM	128.88	83.13	IBM	113.38	4.63	4.3
MDCD	20.25	6.25	Meridian Data Inc.	9.13	0.13	1.4
NETF	7.50	2.75	NetFrame	3.25	-0.25	-7.1
SQNT	25.38	10.13	Sequent Computer Sys.	11.88	0.38	3.3
SEQS	8.50	1.88	Sequoia Systems Inc.	2.38	0.25	11.8
SRA	36.13	16.63	Stratus Computer Inc.	19.38	0.25	1.3
TDM	15.25	8.38	Tandem Computers Inc.	11.63	1.00	9.4
UIS	9.13	5.38	Unisys Corp.	5.88	-0.25	-4.1
Software						**UP 0.34%**
ADBE	74.25	28.50	Adobe Systems Inc.	33.00	1.50	4.8
AMSWA	8.75	3.63	American Software Inc.	4.75	0.25	5.6
APLX	42.50	8.25	Applix Inc.	25.25	-2.00	-7.3
ARSW	82.75	42.50	Arbor Software	42.00	-1.75	-4.0
ADSK	53.00	20.50	Autodesk Inc.	22.00	-0.25	-1.1
BGSS	50.00	29.75	BGS Systems Inc.	44.50	0.00	0.0
BMCS	68.50	32.50	BMC Software Inc. (H)	68.25	2.38	3.6
BOOL	26.75	19.25	Boole and Babbage	24.25	-0.25	-1.0
BORL	21.25	6.06	Borland Int'l Inc.	7.25	-0.38	-4.9
BOBJY	55.50	16.88	Business Objects	23.13	-1.38	-5.6
CAYN	11.88	4.13	Cayenne Software Inc. (L)	4.13	-0.75	-15.4
CYE	27.88	14.13	Cheyenne Software Inc.	19.25	0.63	3.3
COGNF	27.38	9.75	Cognos Inc.	21.75	-1.25	-5.4
CA	58.63	24.88	Computer Associates (H)	57.13	3.38	6.3
CVN	15.50	5.75	Computervision Corp.	7.00	-0.63	-8.2
CPWR	44.50	15.50	Compuware Corp. (H)	42.88	-1.13	-2.6
CSRE	32.00	10.75	Comshare Inc. (L)	13.75	-5.75	-29.5
COSFF	19.13	8.25	Corel Corp.	8.75	0.25	2.9
DWTI	14.75	3.25	Dataware Technologies Inc.	5.00	-0.25	-4.8
FILE	67.00	20.00	Filenet Corp.	26.88	3.50	15.0
FRTE	81.75	24.75	Forte Software	34.00	-0.75	-2.2
DDDDF	8.25	3.56	4th Dimension	4.88	-0.38	-7.1
FTPS	40.63	5.88	FTP Software Inc.	7.88	0.25	3.3
GPTA	10.50	3.50	Gupta	4.75	0.38	8.6
HUM	28.88	15.00	Hummingbird Comm. Ltd.	19.00	2.75	16.9
HYSW	28.38	9.75	Hyperion Software Corp.	12.50	0.50	4.2
IRIC	16.25	10.00	Information Resources	12.63	-0.63	-4.7
IFMX	36.75	16.88	Informix Corp.	26.25	2.50	10.5
INGR	20.13	9.25	Intergraph Corp.	9.94	-0.44	-4.2
LEAF	12.63	3.63	Interleaf Inc.	4.25	-0.25	-5.6
ISLI	25.25	8.38	Intersolv Inc.	9.25	0.31	3.5
INTU	89.25	31.75	Intuit Inc.	39.38	2.63	7.1
LGWX	22.25	9.25	Logic Works (L)	9.25	-0.75	-7.5
MAPS	34.25	7.50	MapInfo Corp.	10.50	-0.63	-5.6
MATH	9.25	4.63	MathSoft	7.13	0.13	1.8
MCAF	64.00	17.00	McAfee Associates (H)	62.00	3.00	5.1
MENT	22.88	10.88	Mentor Graphics	13.75	1.19	9.5
MFGY	21.25	8.25	Micro Focus	11.00	-1.00	-8.3
MGXI	18.63	8.75	Micrografx Inc.	12.50	0.38	3.1
MSFT	125.88	79.88	Microsoft Corp.	125.00	2.63	2.1
ORCL	42.00	23.38	Oracle Corp. (H)	41.50	1.75	4.4
PMTC	49.50	25.38	Parametric Technology	45.38	-0.13	-0.3
PARQ	14.63	4.38	ParcPlace Systems Inc.	4.88	0.00	0.0
PSFT	75.75	32.25	Peoplesoft (H)	75.50	0.50	0.7
PTEC	20.38	9.88	Phoenix Technologies	17.75	0.88	5.2
PSQL	16.00	3.13	Platinum Software	9.50	1.50	18.8
PLAT	26.00	9.25	Platinum Technology	11.00	0.81	8.0
PRGS	38.00	12.13	Progress Software Corp. (L)	12.88	-0.50	-3.7
RNBO	25.50	14.63	Rainbow Technologies Inc.	18.13	0.25	1.4
REDB	61.00	18.25	Red Brick Systems Inc.	22.75	-4.75	-17.3
ROSS	8.13	2.19	Ross Systems	5.88	1.00	20.5
SAPE	58.25	29.25	Sapient Corp.	44.00	3.06	7.5
SCOC	12.13	5.50	SCO Inc.	6.13	0.63	11.4
SDTI	109.00	18.25	Security Dynamics Tech.	76.50	10.00	15.0
SKEY	51.75	13.38	Softkey International Inc.	19.88	-1.00	-4.8
SPCO	5.13	2.19	Software Publishing Corp.	2.56	-0.19	-6.8
SQAX	39.75	16.00	SQA Inc.	23.63	2.38	11.2
SOTA	19.75	7.63	State of the Art	17.25	-0.88	-4.8
SSW	81.38	40.00	Sterling Software Inc.	71.50	1.00	1.4
SDRC	37.38	12.75	Struct. Dynamics Research	19.13	0.25	1.3
SYBS	39.75	15.38	Sybase Inc.	18.00	-0.63	-3.4
SYMC	33.25	8.75	Symantec Corp.	11.25	1.25	12.5
SNPS	45.75	23.00	SynOpsys	39.88	0.13	0.3
SSAX	30.63	9.00	System Software Assoc.	9.00	-3.88	-30.1
SYSF	30.38	4.38	Systemsoft Corp.	25.75	1.88	7.9
SOTA	19.75	7.63	State of the Art	17.25	-0.88	-4.8
SSW	81.38	40.00	Sterling Software Inc.	71.50	1.00	1.4
SDRC	37.38	12.75	Struct. Dynamics Research	19.13	0.25	1.3
SYBS	39.75	15.38	Sybase Inc.	18.00	-0.63	-3.4
SYMC	33.25	8.75	Symantec Corp.	11.25	1.25	12.5
SNPS	45.75	23.00	SynOpsys	39.88	0.13	0.3
SSAX	30.63	9.00	System Software Assoc.	9.00	-3.88	-30.1
SYSF	30.38	4.38	Systemsoft Corp.	25.75	1.88	7.9
SOTA	19.75	7.63	State of the Art	17.25	-0.88	-4.8
SSW	81.38	40.00	Sterling Software Inc.	71.50	1.00	1.4
SDRC	37.38	12.75	Struct. Dynamics Research	19.13	0.25	1.3
SYBS	39.75	15.38	Sybase Inc.	18.00	-0.63	-3.4
SYMC	33.25	8.75	Symantec Corp.	11.25	1.25	12.5
SNPS	45.75	23.00	SynOpsys	39.88	0.13	0.3
SSAX	30.63	9.00	System Software Assoc.	9.00	-3.88	-30.1
SYSF	30.38	4.38	Systemsoft Corp.	25.75	1.88	7.9
Internet						**UP 4.99%**
AMER	71.00	24.50	America On-Line	29.75	-6.13	-17.1
BBN	48.75	15.63	BBN Corp.	20.13	0.38	1.9
CSRV	35.50	10.75	Compuserve Corp.	14.88	1.50	11.2
EDFY	55.75	16.25	Edify Corp.	26.00	2.25	9.5
LCOS	29.25	5.75	Lycos Inc. (L)	8.25	2.13	34.7
NETC	91.50	16.00	Netcom On-Line	21.00	1.00	5.0
NSCP	87.00	22.88	Netscape Comm. Corp.	46.25	1.38	3.1
OMKT	42.25	13.75	Open Market Inc.	18.25	1.00	5.8
PSIX	29.00	6.75	PSINet	9.25	-0.75	-7.5
QDEK	39.50	5.63	Quarterdeck Corp.	8.50	1.63	23.6
RAPT	39.25	16.63	Raptor Systems	19.25	0.13	0.7
SCUR	64.50	13.50	Secure Computing Corp.	15.75	1.63	11.5
SPYG	61.00	12.00	Spyglass Inc.	16.63	1.13	7.3
UUNT	98.75	24.25	UUNET Tech.	57.38	-5.00	-8.0
YHOO	43.00	15.50	Yahoo! Inc.	17.25	-1.25	-6.8
Semiconductors						**UP 5.08%**
AMD	36.00	10.25	Advanced Micro Devices	13.88	1.50	12.1
ADI	30.13	17.00	Analog Devices Inc.	22.38	0.13	0.6
CHPS	15.88	7.88	Chips and Technologies	11.00	-0.19	-1.7
CRUS	61.13	12.63	Cirrus Logic	17.13	2.88	20.2
CY	27.75	9.13	Cypress Semiconductor Corp.	11.88	0.00	0.0
CYRX	49.75	12.50	Cyrix	16.00	1.50	10.3
INTC	82.63	49.81	Intel Corp. (H)	82.13	3.69	4.7
LSI	62.50	17.00	LSI Logic Corp.	23.00	2.13	10.2
LSCC	42.50	19.75	Lattice Semiconductor	28.00	0.13	0.4
MCRL	32.50	12.00	Micrel Semiconductor Inc.	18.00	-0.50	-2.7
MU	94.75	16.63	Micron Technology	24.88	3.88	18.5
MOT	82.50	44.75	Motorola Inc.	56.75	1.25	2.3
NSM	33.63	13.00	National Semiconductor	15.25	0.25	1.7
TXN	83.75	40.50	Texas Instruments	46.88	2.00	4.5
VLSI	39.13	10.38	VLSI Technology	13.94	0.06	0.5
WDC	34.13	14.38	Western Digital Corp. (H)	33.88	1.75	5.4
XLNX	55.50	23.25	Xilinx	38.88	2.13	5.8
ZLG	48.00	20.00	Zilog Inc.	25.63	2.25	9.6
Peripherals and Subsystems						**UP 1.67%**
APCC	17.50	7.88	American Power Conversion	12.25	0.00	0.0
ADPT	61.50	35.00	Adaptec Inc.	48.75	0.75	1.6
CBEX	13.00	4.00	Cambex Corp.	4.75	0.50	11.8
CGN	7.25	3.38	Cognitronics Corp.	3.94	0.19	5.0
CREAF	14.13	4.25	Creative Technology Ltd.	4.50	-0.13	-2.7
RACE	12.00	3.63	Data Race Inc.	6.50	0.38	6.1
DTM	9.38	4.13	Dataram Corp.	7.13	0.88	14.0
EMC	23.38	13.00	EMC Corp.	20.25	-0.38	-1.8
EMLX	27.63	6.38	Emulex Corp.	13.75	-0.75	-5.2
ESCC	29.00	16.00	Evans and Sutherland	21.00	0.25	1.2
EXBT	22.75	10.00	Exabyte	13.38	0.13	0.9
IISLF	4.13	1.50	Intelligent Info. Systems	1.88	0.00	0.0
IOMG	55.13	2.75	Iomega Corp.	17.13	-1.13	-6.2
IPLS	8.25	1.88	IPL Systems Inc.	2.50	0.13	4.8
KMAG	37.50	17.63	Komag Inc.	23.75	2.69	12.8
MTSI	22.50	11.25	Micro Touch Systems Inc.	14.50	-1.00	-6.5
PEAK	34.75	17.25	Peak Technology Group	22.75	0.38	1.7
PNCL	19.75	4.88	Pinnacle Micro Inc.	6.50	0.38	6.1
AQM	6.75	3.25	QMS Inc.	5.13	0.13	2.5
QNTM	28.50	10.88	Quantum Corp.	13.88	1.00	7.8
RDUSC	9.63	0.94	Radius Inc.	1.44	-0.28	-16.4
SEG	67.75	36.13	Seagate Technology	52.88	2.75	5.5
STK	44.13	21.75	Storage Technology	37.88	1.13	3.1
STLC	8.75	1.25	Streamlogic Corp.	2.25	0.00	0.0
TEK	61.88	29.75	Tektronix Inc.	40.63	1.75	4.5
XRX	55.13	39.00	Xerox Corp. (H)	54.13	1.25	2.4
Services						**UP 0.74%**
AMSY	33.38	15.38	American Mgmt. Systems	25.25	0.81	3.3
ANLY	43.75	26.00	Analysts Int'l.	36.50	-1.00	-2.7
AUD	43.38	31.88	Auto Data Processing	41.13	0.00	0.0
CATP	30.75	11.00	Cambridge Tech. Partners	25.75	0.25	1.0
CEN	54.88	36.63	Ceridian Corp.	45.75	-0.63	-1.3
CDO	28.63	18.88	Comdisco Inc.	26.25	0.88	3.4
CHRZ	54.00	11.63	Computer Horizons	25.88	2.88	12.5
CSC	80.75	57.88	Computer Sciences	73.13	1.88	2.6
TSK	31.88	13.25	Computer Task Group	28.88	0.25	0.9
CPU	48.75	12.88	CompUSA Inc.	43.38	1.25	3.0
CDAT	97.50	8.88	Control Data Systems Inc.	18.63	-0.75	-3.9
EGGS	13.88	5.00	Egghead Discount Software	7.00	-0.50	-6.7
EDS	58.63	43.88	Electronic Data Systems Corp.	54.00	0.00	0.0
INAC	24.25	9.13	Inacom Corp.	22.50	0.13	0.6
INEL	13.50	3.50	Intelligent Electronics	6.13	-0.13	-2.0
KEA	41.25	18.25	Keane Inc.	39.38	-0.38	-0.9
MSEL	7.75	2.25	Merisel	3.00	0.13	4.3
MICA	16.25	7.25	Micropage Inc.	13.56	0.06	0.5
PAYX	52.88	24.75	Paychex	45.75	0.75	1.7
PMS	55.50	36.50	Policy Management Sys. (L)	37.63	-1.13	-2.9
REY	54.50	30.13	Reynolds and Reynolds	47.63	-3.13	-6.2
SCBI	30.50	14.44	SCB Computer Tech. Inc.	17.88	0.50	2.9
SEIC	26.38	17.75	SEI Corp.	19.88	0.38	1.9
SMED	72.13	35.63	Shared Medical Systems	53.75	-3.25	-5.7
SSPE	26.00	17.00	Software Spectrum Inc.	25.75	2.50	10.8
VST	19.38	9.00	VanStar Corp. (H)	18.50	0.63	3.5
SNDT	41.75	25.25	Sungard Data Systems (H)	38.88	-0.63	-1.6

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-484U) is published weekly; except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1996 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased through the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3.00 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marion, OH 43305.

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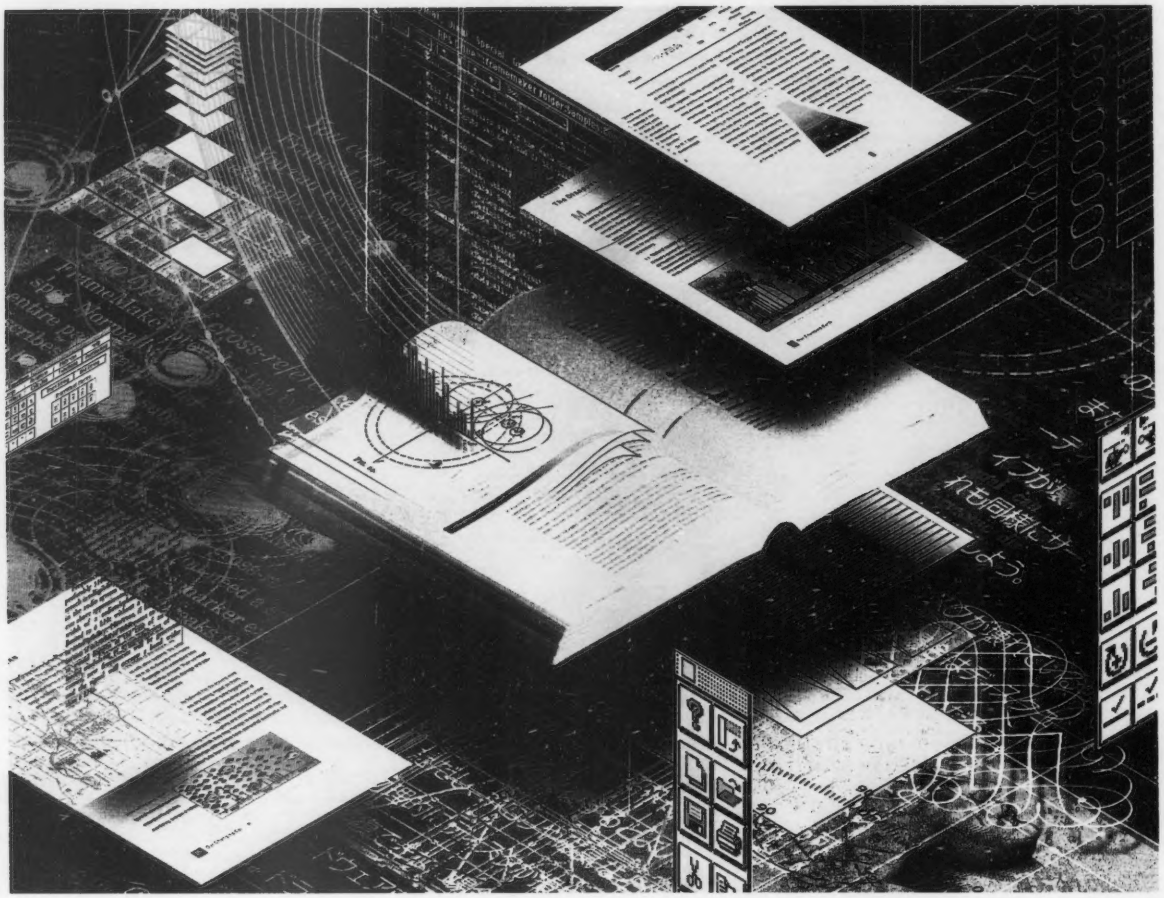

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Microsoft vs. Netscape? Oh, never mind.

Charles Babcock

The Meta View

The charge toward intranets is being led by end users, not IS.

What will be the dominant user interface of the corporate intranet — the Windows operating system or a light-footed browser such as Netscape's Navigator?

Neither.

IS can't independently select a user interface for the intranet because the charge toward intranets is being led by end users, not IS.

IS is scrambling to get in front of the intranet parade, just as it did with the desktop revolution. But this time, IS managers must acknowledge that the marchers know their own minds.

Yes, that's right: minds, plural. As the computing revolution continues, end users are gaining increasing sophistication at the top, even as their numbers continue to spread out rapidly at the base.

In the long run, this mix of users will require a desktop environment that can address many skill levels. But the shape of that environment isn't visible yet. In the short run, the challenge to IS is to leverage the existing infrastructure to get users quickly on the intranet.

When Delphi Consulting Group in Cambridge, Mass., surveyed 400 organizations about their intranet plans, it found that 20% expected Microsoft to provide the dominant intranet environment and that 10% expected Netscape to set the standard.

Seventy percent expected some kind of Web browser to constitute the user interface but were unwilling to say that either Microsoft or Netscape would dominate.

The IS challenge, then, isn't to focus on Microsoft vs. Netscape but to build an infrastructure that delivers intranet computing.

Windows critics argue that it's time to execute a paradigm shift to network computing and dump the desktop operating system.

If you're an IS manager, don't tell that to end users, not if you want to keep your head.

Users are saying, "Give us Internet-style capabilities."

They aren't demanding that their Windows applications be purged.

Microsoft, in its own way, understands what's needed and is hell-bent on giving end users the metaphor — inside the Windows operating system. That approach will work in the short run, given the status of Windows on desktops. But it may not be viable in the long run.

I see Windows 3.x, Windows 95 and Windows NT Workstation merging into a high-end user environment with many capabilities for taking advantage of the intranet/Internet.

Part of this user environment will be sophisticated applications that put mainframe-style database, financial analysis and document management on the desktop.

Organizations with many sophisticated knowledge workers will be heavy Windows NT users.

But many end users won't need that much power. They'll need only a few applications with general information-retrieval capabilities.

For a user interface, they'll be satisfied with a simple browser.

In the long run, the intranet will become an environment that can sustain a wide variety of user skill levels while allowing a few information-retrieval patterns to be shared throughout.

If IS managers can assimilate this end-user demand, they'll have a lot of leeway in how they implement it.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Extranet: Best of both 'nets

CONTINUED FROM COVER 1

can do more business faster."

Pasadena, Calif.-based Countrywide is on the edge of an intranet trend, analysts said.

"This is beyond the intranet idea," said Jerry Grochow, chief technology officer at American Management Systems, Inc., a consulting firm in Fairfax, Va. "You're taking knowledge of your organization and saying that information becomes a product that you make available to your customers."

Federal Express Corp.'s Web-based package-tracking system is perhaps the most famous example of an extranet. But while other users are starting to consider the notion, Countrywide pushed past security worries to build during the past several months one of the biggest hybrids.

Called Platinum Lender Access, Countrywide's hybrid system lets a bank that processes a mortgage application, for example, point a browser to the Platinum site to check loan status, account history or interest rates.

Each bank's name, password, identification number and other secret proprietary information are automatically checked by Countrywide's secure Web server so that it hands out only data that that particular bank is entitled to see.

Previously, banks faxed, telephoned and mailed requests to Countrywide, which responded in kind, sometimes taking several days to do so. Now 200 to 300 of the mortgage company's 500 partners answer their own questions, said Jerry Gross, chief technology officer at Countrywide.

Enough partners now participate to generate "significant savings" for Countrywide in phone, paper and mailing costs, Gross said. He declined to specify how much the company has saved but said it was enough to persuade senior managers to approve a string of hybrid applications to be built in the next year.

The biggest risk to the hybrid approach is exposing financial data about individual home buyers or partners to hackers or competitors.

To avoid that disaster, Countrywide has several layers of security, only a few of which Gross would discuss.

Still, concerns about Internet security have kept about half of Countrywide's partners from going online. The firm explained to its partners the Secure Sockets Layer encryption scheme in its Netscape Communications Corp. software and the various commercial firewall products it runs. Gross declined to detail other custom-built methods.

"We told them that nothing is 100% secure, and we've done all the due diligence we can do," Gross said.

Countrywide Home Loans
Pasadena, Calif.

Countrywide calls its hybrid Internet/intranet application an "extranet"

TECHNOLOGY USED:

Netscape Web servers and browsers

IBM AS/400, Sun Microsystems Unix and PC hardware

AS/400 and Microsoft SQL Server databases

Various security firewalls

HOW IT WORKS:

200 banks and brokers that process mortgage loans for Countrywide get secured access to Countrywide's internal financial databases and intranet systems

Unix

CONTINUED FROM COVER 1

"If we had as many failures on our mainframe [as we do on our Unix servers], I wouldn't have a job," said Rich Malone, chief information officer at Edward D. Jones & Co., a brokerage firm in St. Louis. With that in mind, his company is slowing down its mainframe-to-Unix migration plans.

Malone and other users said the lower cost and packaged applications of Unix systems — plus the benefits of moving processing closer to end users — keep them from retreating to the mainframe entirely. But heavy-duty I/O and transaction applications still fit better on big iron, they added.

Unix markets

Unix also lacks mainframe-like tools for monitoring areas such as performance and capacity usage, Malone said.

As a result, an 18-month schedule for moving most of Edward D. Jones' applications to a collection of 45 Sun Unix servers installed last year has slipped by six to eight months, Malone said. And the firm doesn't plan to separate its high-volume trade processing workload from the mainframe.

Shipments of Unix servers are expected to grow at a healthy average annual rate of 12% in the next five years, according to a recent forecast from International Data Corp. in Framingham, Mass.

But Windows NT servers are expected to surpass Unix boxes in shipments this year and to widen the gap with each succeeding year, IDC predicted.

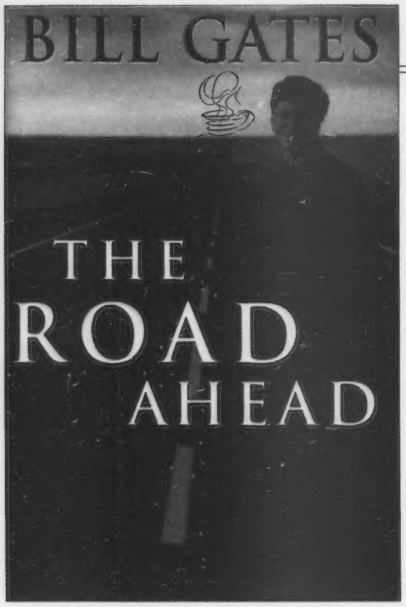
It could take several years to make Unix servers mainframe-class, but NT is expected to make "serious encroachment" into the low-end and midrange Unix markets next year, said Rich Partridge, an analyst at D. H. Brown Associates, Inc.

Meanwhile, mainframes continue their Lazarus-like recovery, with IBM reporting a 50% jump in System/390 MIPS shipments in the second quarter.

Unix vendors "continue to sell the sizzle and not the steak, and I think that's going to come back to haunt them in the long run," said Stan Johnson, director of MIS at Worldport LA, the port authority for Los Angeles.

The lack of monitoring, security and backup/recovery tools "really handicaps" Unix when it comes to running a full production environment, Johnson added.

The port hoped to move its processing from a mainframe to Sun servers that it began using last year. But those plans have been pared back. Johnson said he may benchmark his Unix servers against NT boxes.



Those smart alecks at Sun Microsystems *just can't resist the urge to poke fun at their nemesis, Microsoft CEO Bill Gates. Making the rounds on Sun's internal Unix network recently was this tongue-in-cheek alteration that makes* The Road Ahead *lead right into a nice cup of Java. Time will tell.*

alt.cw

Brain shades

ShieldWorks in Durham, N.C., *makes a cap out of metallic fabric that's supposed to shield the wearer from the insidious "electrosmog" of wireless networks. The company claims the cap provides relief from the radio frequency signals "that flood our bodies and interfere with our mental processes." About 4,000 people have purchased the so-called CyberCap at a pricey $39.95 to achieve what the company calls a Radio Free Head.*

— Patrick Dryden

News to ponder

The Magellan search engine (**www.mckinley.com**) has a new feature called search voyeur. It shows 20 randomly selected search requests, but it doesn't name the searchers. The voyeur page (voyeur.mckinley.com) is updated every 20 seconds, and visitors can click on the keywords to do the same search. But be forewarned: Voyeurs will see lots of adult material. — *Jeremy Selwyn*

Looking for a screen saver that's more educational than flying toasters? Digital Destinations (**www.digidest.com**) in Davis, Calif., offers Windows screen savers that subliminally teach the characters of the Japanese writing system.

The eighth annual Tour de Donut in Staunton, Ill., was won by 29-year-old computer programmer Roy Wehling, United Press International reported. Under the rules of the 30-mile bicycle race, contestants subtract five minutes from their time for every doughnut they eat during the race. Wehling, who downed 18 doughnuts en route, had an adjusted time of 31 minutes.

Inside Lines

It's not polite to point . . .

But our parents apparently never told computer industry vendors. That was glaringly apparent in the wake of America Online's networkwide outage last week (see story, Cover 1). Though AOL admitted human error caused most of the problem, that didn't stop vendors with equipment in the AOL network from blaming one another's products for the service blackout. Everyone joined the finger-pointing fray, including router, switch, minicomputer and management system providers. Even rivals of the equipment vendors called to offer help in assigning blame. This leads us to wonder how information systems managers deal with this phenomenon when problems arise in their multivendor networks.

Coffee, tea or a laptop power supply

Pentium chips and high-resolution color displays are such power hogs that if you want to work on a plane, you have to buy an extra seat for all the extra batteries you'll need. Delta Air Lines hopes to change that. The airline is conducting a six-month test of its EmPower In-Seat Power Supply system, which will allow passengers to operate and recharge laptop computers in flight. Next up: flight attendants trained as Minesweeper coaches.

Mac users take the plunge

Not only are Macintosh users a loyal bunch, but they're also a brave lot. Hundreds of attendees at the Macworld Expo in Boston lined up to bungee jump off a 225-foot high tower erected by Macintosh clone maker Power Computing. Those crazy guys from the Lone Star state really know how to do it up big. They used the promotional plummet in honor of their newly introduced 225-MHz 604e PowerPC Macintosh clone. Meanwhile, Power Computing was the hottest booth on the show floor. Jam-packed at all times with hundreds of onlookers, Power Computing's game show and giveaway schtick got Macintosh users excited. One Microsoft employee even took off his shirt just so he could participate in the antics.

A patient is a patient, of course, of course

Help is on the way for computer-phobic physicians. An outfit called Medifor in Port Townsend, Wash., has introduced Patient Ed, a Windows-based program designed to help primary-care doctors generate customized aftercare instructions for their patients. The software, which includes fields for prescribed medications and precautions, ships on a CD-ROM and includes 48 animated training tutorials to reduce training cost and time.

Sun, IBM become strange bedfellows

Sun Microsystems CEO Scott McNealy once delighted in firing barbs at his strait-laced enemy, IBM. How times have changed. Now the enemy is Microsoft, and next week Sun and IBM will cozy up at the Object World trade show in San Francisco, where they'll announce a deal to make sure their object-oriented technologies work together.

A New Jersey attorney's Web site describes pending litigation and seeks help preparing his jury selection and trial presentation. Cases profiled so far at cyberjury.com smack of "daytime TV talk show" topics: allegations of seduction by a psychiatrist, malpractice during penis enlargement surgery and job loss due to a sex change. Participants must provide demographic information before offering their evaluation. Computerworld *wants to hear how you have been seduced, rightsized or downsized, but you don't have to register. Just call our voice-mail news tip line at (508) 820-8555, call news editor Patricia Keefe at (508) 820-8183 or send E-mail to patricia_keefe@cw.com.*

"I started running OS/2 Warp Server on all my networks and guess what?

My rainy days are over."

Consolidate

It was time to think about consolidating the company's mixed environment network onto one operating system. That's why Steve Conaway, Director of Computer Services at the Financial Times, decided to check out the new release of OS/2® Warp Server.

In no time at all, Steve was waxing poetic over OS/2 Warp Server's ability to handle blockbuster-sized databases and make Internet and intranet access a breeze. He was also impressed with all the advanced printing capabilities and management features that simplified the running of both his network and his life. Which is why Steve now thinks of OS/2 Warp Server as his umbrella network operating system.

Find out what got Steve so excited. Call 1 800 IBM-2468, ext. EA130, or visit us at www.software.ibm.com/info/ea130 for details. With special offers of additional software (valued at up to $1,400) available when you buy OS/2 Warp Server and Lotus Notes® before September 30, 1996, there's really no better way to demonstrate fiscal responsibility.

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